SOLICITATION, OFFER AND AWARD	1. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 350)	RATING	PAGE OF * PAGES

2. CONTRACT NO.	3. SOLICITATION NO.	4. TYPE OF SOLICITATION	5. DATE ISSUED	6. REQUISITION/PURCHASE NO.
	PR-R9-00-10041	[ ] SEALED BID (IFB) [X] NEGOTIATED (RFP)	APRIL 12, 2000	PR-R9-98-10676

7. ISSUED BY (Hand Carried/Courier Address)	CODE	8. ADDRESS OFFER TO (If other than Item 7) (U. S. Mail Only)
U.S. Environmental Protection Agency **75 Hawthorne Street (PMD-8)** **San Francisco, CA 94105**		**Same as Block 7**

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder"

SOLICITATION

9. Sealed offers in original and _ copies for furnishing the supplies or services in the Schedule will be received at the place specified in item 8, or if handcarried, in the depository located in item 7 until Close of business, local time MAY 12, 2000
(*Hour*) (*Date*)

CAUTION - LATE Submissions, Modifications, and Withdrawals: See Section L, Provision No. 52.214-7 or 52.215-10 All offers are subject to all terms and conditions contained in this solicitation.

RFP for "U.S EPA Region IX Regional Environmental Analytical Procurement (REAP): Laboratory Analytical Services for Organic and Inorganic Samples" (SIC: 8734; NAIC: 54138)

10. FOR INFORMATION CALL:	A. NAME	B. TELEPHONE NO. (Include area code) (NO COLLECT CALLS) :
	Jeri Simmons, Contract Specialist	**415-744-1616**

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x	B	SUPPLIES OR SERVICES AND PRICES/COSTS				PART III - LIST OF DOCUMENTS, EXHIBITS AND OTHER ATTACH.	
x	C	DESCRIPTION/SPECS./WORK STATEMENT		x	J	LIST OF ATTACHMENTS	
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x	E	INSPECTION AND ACCEPTANCE		x	K	REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS	
x	F	DELIVERIES OR PERFORMANCE					
x	G	CONTRACT ADMINISTRATION DATA		x	L	INSTRS., CONDS., AND NOTICES TO OFFERORS	
x	H	SPECIAL CONTRACT REQUIREMENTS		x	M	EVALUATION FACTORS FOR AWARD	

OFFER (Must be fully completed by offeror)

NOTE: Item 12 does not apply if the solicitation includes the provisions in 52.214-16, Minimum Bid Acceptance Period.

12. In compliance with the above, the undersigned agrees, if this offer is accepted within _____ calender days (60 calendar days unless a different period is inserted by the offeror) from the date for receipt of offers specified above, to furnish any or all items upon which prices are offered at the price set opposite each item, delivered at the designated point(s), within the time specified in the schedule.

13. DISCOUNT FOR PROMPT PAYMENT (See Section I, Clause 52-232-8)	10 CALENDAR DAYS %	20 CALENDAR DAYS %	30 CALENDAR DAYS %	__ CALENDAR DAYS %

14. ACKNOWLEDGMENT OF AMENDMENTS (The offeror acknowledges receipt of amendments to the SOLICITATION for offerors and related documents numbered and dated:)	AMENDMENT NO.	DATE	AMENDMENT NO.	DATE

15A. NAME AND ADDRESS OF OFFEROR	CODE	FACILITY	16 NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER (*Type or print*)

15B. TELEPHONE NO. (Include area code)	15C. CHECK IF REMITTANCE ADDRESS IS DIFFERENT FROM ABOVE. ENTER [ ] SUCH ADDRESS IN SCHEDULE	17. SIGNATURE	18. OFFER DATE

AWARD (To be completed by Government)

19. ACCEPTED AS TO ITEMS NUMBERED	20. AMOUNT	21. ACCOUNTING AND APPROPRIATION	
22. AUTHORITY FOR USING OTHER THAN FULL AND OPEN COMPETITION: [ ] 10 U.S.C. 2304(c)( ) [ ] 41 U.S.C. 253(c)( )		23. SUBMIT INVOICES TO ADDRESS SHOWN IN (4 copies unless otherwise specified)	ITEM
24. ADMINISTERED BY (If other than item 7) CODE		25. PAYMENT WILL BE MADE BY CODE:	
26. NAME OF CONTRACTING OFFICER (*Type or print*)		27. UNITED STATES OF AMERICA *(Signature of Contracting Officer)*	28. AWARD DATE

IMPORTANT - Award will be made on this Form, or on Standard Form 26, or by other authorized official written notice

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PART I - THE SCHEDULE

SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS

B.1 FURNISH SERVICES AS FOLLOWS:

REGIONAL ENVIRONMENTAL ANALYTICAL PROCUREMENT, REGION IX:
The Contractor shall furnish all labor, material, supplies, supervision and equipment necessary, unless otherwise specified herein, to provide LABORATORY ANALYTICAL SERVICES FOR ORGANIC AND INORGANIC SAMPLES to the United States Environmental Protection Agency (EPA), Region IX, in support of EPA's investigative and cleanup responsibilities, and other environmental measurements as may be required, in accordance with the Statement of Work in Section J, Attachment 1, and the terms and conditions herein. The work includes analysis of hazardous waste samples and application of methods for the isolation, detection, and quantitative measure of organic and inorganic samples.

In many cases, analytical data provided by the Contractor will be utilized to support U.S. EPA's enforcement actions; and therefore, must be of the highest quality. Accordingly, the Contractor is required to adhere to strict quality control procedures, utilize approved analytical methods, and submit analytical data in a standardized format, all in accordance with the Statement of Work herein.

SCHEDULE OF ITEMS AND PRICES
See Clause B.7 below.

B.2 CONTRACT TYPE: The contemplated contract type is Indefinite Delivery/ Indefinite Quantity, with firm fixed unit prices, and a guaranteed minimum for the base period (reference B.5 below)

B.3 ESTIMATED COST AND FUNDING:

A.

		Estimated Cost	**Funding**
BASE YEAR			
(a)	Current	$_____	$_____
(b)	Change	$_____	$_____
(c)	New Total	$_____	$_____
OPTION PERIOD #1			
(d)	Current	$_____	$_____
(e)	Change	$_____	$_____
(f)	New Total	$_____	$_____
OPTION PERIOD #2			
(g)	Current	$_____	$_____
(h)	Change	$_____	$_____
(i)	New Total	$_____	$_____
TOTALS.....		**$_____**	**$_____**

(NOTE: for time periods of the base and option periods, reference Clause F.1)

B. Total value of all task orders issued to the Contractor shall not exceed the total funds shown above, in paragraph (A). If the Contractor receives a task order(s) exceeding the above funding, the Contractor shall notify the Contracting Officer immediately, before proceeding with the work covered by the task order(s).

B.4 FIRM FIXED UNIT PRICES FOR STANDARD AND NON-STANDARD WORK

All unit prices shown in B.7 are firm fixed unit prices inclusive of all costs, including labor necessary to perform the Statement of Work herein, material, equipment, indirects (e.g. overhead and general and administrative expenses), profit, and all other costs necessary to perform the Statement of Work in Section J, Attachment 1. These prices are firm for the period of performance shown in Section F, Clause F.1.

For non-standard methods and matrices, as contemplated by the Statement of Work, in Section J, Attachment 1, the Contractor is required to obtain Contracting Officer approval of the unit prices in advance of performing the work. Non-standard work may include, but is not limited to sample analysis for lower levels of detection than those indicated in Clause B.7; matrices other than those shown in Clause B.7, which may require specialized analytical procedures and/or techniques. EPA Region IX anticipates that requirements for non-standard methods and matrices will not exceed 10% of the total requirements. During the performance of the contract, prices for non-standard work will be negotiated on a case-by-case basis, with final approval of the fixed unit price by the Contracting Officer.

B.5 INDEFINITE QUANTITY AND MINIMUM/MAXIMUM ORDERS:

a. This is a firm fixed price, indefinite delivery, indefinite quantity contract for the services specified in B.1 above, Required Supplies/Services.

b. The total dollar value of the MINIMUM quantity of sample analyses the Government shall be obligated to purchase under this contract is **$50,000***. The Government intends to purchase the guaranteed minimum during the Base Period.

c. The dollar value of the MAXIMUM quantity of sample analyses the Government intends to purchase throughout the entire contract period, if all option periods are exercised, is **$**_____.

d. The dollar values of the minimum and maximum quantities shown above are based upon the fixed unit prices in Clause B.7. Payment of the minimum is based upon EPA's receipt of quality data and performance in accordance with the Statement of Work herein.

*$50,000 if two contracts are awarded, $100,000 if one is awarded (reference "Basis of Award"provision in Section L)

(Note: reference the clause entitled "Indefinite Quantity", in Section H, Clause H.3)

B.6 ORDERING WORK AND WORK ORDER OFFICIALS

a. The Government will order services under this contract by issuing task

orders (reference sample form in Section J, Attachment 2). Work will be ordered within the approved period of performance (reference Clause F.1), by the following Government personnel only* (reference Clause G.1 herein for addresses and phone numbers of the personnel shown below):

1) ..... EPA Project Officer (PO)

2) ..... EPA Alternate Project Officer (APO)

*the EPA Contracting Officer can also place orders under this contract

The PO and APO will be determined at time of contract award.

The Government is not responsible for payment of an order that has been placed by other than the individuals listed above. The PO and APO have no authority to change the fixed unit prices shown in B.1 above, exceed the maximum dollar value shown in Clause B.5, or change any term and condition herein. Contracting Officer approval is required of any fixed unit price not shown in Clause B.7 for work covering non-standard methods and matrices. The Contractor certifies, by signing this contract, that the Government shall not be charged more than the Contractor's commercial clients and customers for the same analyses and work covered under this contract.

b. Work may be ordered verbally, electronically, or by a written task order, which may be faxed and/or mailed to the Contractor. If work is ordered verbally, a written task order shall be issued within five (5) calendar days of the verbal order. If the Contractor has not received a written task order within the five (5) days, the Contractor shall notify the Contracting Officer accordingly.

c. ALL WORK IS SUBJECT TO AVAILABILITY OF FUNDS:

(1) EPA is not obligated to order the exact quantities shown in Clause B.7, as these are estimates only. Actual quantities may be greater or less than the estimated quantities shown, but shall not exceed the total potential maximum dollar value of this contract. Also, for the estimated quantities shown in Clause B.7, the Government reserves the right to award one to two contracts.

(2) Notwithstanding the above, no work shall be performed beyond the amount of funds obligated to this contract (reference Clause B.3 above).

(Note: reference the clause entitled "Ordering", in Section G, Clause G.6).

B.7 SCHEDULE OF ITEMS AND PRICES

A. Frequency of Turnaround: EPA anticipates the following frequency of turnaround for sample analyses of the analytes shown below, under the Schedule of Items & Prices:

1)	7-Day turnaround:	5%
2)	14-Day turnaround:	25%
3)	35-Day turnaround:	70%

Based on the above anticipated frequencies, the bulk of the requirements will be sample packages received within the 35-day timeframe.

B. Estimated Quantity of Analytes: Because of uncertainties in knowing exactly what analytes, and quantity of analytzes, will be required, EPA has not included estimated quantities in the RFP; therefore, the Proposers should take this into account when proposing a firm fixed unit price (see Schedule of Items & Prices next page).

The Proposer should state in their Proposal whether or not there will be a different fixed unit price for the same analyte based on a volume discount. If this information is not provided, the fixed unit price shown in the proposal will be considered by EPA to be a firm fixed unit price, regardless of the amount of samples.

C. FIXED PRICES–INDEFINITE DELIVERY/INDEFINITE QUANTITY CONTRACT (EP 52.216-135) (APR 1984)

The following fixed rates shall apply for payment purposes for the Base Period:

see next page....

SCHEDULE OF ITEMS & PRICES: BASE PERIOD					
Description					
		UNIT PRICE		**UNIT PRICE***	
ORGANIC ANALYSES				***Volume Discount if applicable**	
VOA - 8260		**(water)**			
0001A	**7-DAY**		**$_____**	**$_____**	
0001B	**14-DAY**		**$_____**	**$_____**	
0001C	**35-DAY**		**$_____**	**$_____**	
VOA - 8260		**(soil)**			
0002A	**7-DAY**		**$_____**	**$_____**	
0002B	**14-DAY**		**$_____**	**$_____**	
0002C	**35-DAY**		**$_____**	**$_____**	
VOA - low	**detection limits**	**(water)**			
0003A	**7-DAY**		**$_____**	**$_____**	
0003B	**14-DAY**		**$_____**	**$_____**	
0003C	**35-DAY**		**$_____**	**$_____**	
VOA - low	**detection limits**	**(soil)**			
0004A	**7-DAY**		**$_____**	**$_____**	
0004B	**14-DAY**		**$_____**	**$_____**	
0004C	**35-DAY**		**$_____**	**$_____**	
VOA - 8010/8020		**(water)**			
0005A	**7-DAY**		**$_____**	**$_____**	
0005B	**14-DAY**		**$_____**	**$_____**	
0005C	**35-DAY**		**$_____**	**$_____**	
VOA - 8010/8020		**(soil)**			
0006A	**7-DAY**		**$_____**	**$_____**	
0006B	**14-DAY**		**$_____**	**$_____**	

SCHEDULE OF ITEMS & PRICES: BASE PERIOD					
Description					
SVOC - 8270		**(water)**			
0007A	**7-DAY**		**$_____**	**$_____**	
0007B	**14-DAY**		**$_____**	**$_____**	
0007C	**35-DAY**		**$_____**	**$_____**	
SVOC - 8270		**(soil)**			
0008A	**7-DAY**		**$_____**	**$_____**	
0008B	**14-DAY**		**$_____**	**$_____**	
0008C	**35-DAY**		**$_____**	**$_____**	
PESTICIDES/PCBs - 8080/8081/8082			**(water)**		
0009A	**7-DAY**		**$_____**	**$_____**	
0009B	**14-DAY**		**$_____**	**$_____**	
0009C	**35-DAY**		**$_____**	**$_____**	
PESTICIDES/PCBs - 8080/8081/808			**(soil)**		
0010A	**7-DAY**		**$_____**	**$_____**	
0010B	**14-DAY**		**$_____**	**$_____**	
0010C	**35-DAY**		**$_____**	**$_____**	
HERBICIDES - 8150		**(water)**			
0011A	**7-DAY**		**$_____**	**$_____**	
0011B	**14-DAY**		**$_____**	**$_____**	
0011C	**35-DAY**		**$_____**	**$_____**	
HERBICIDES - 8150		**(soil)**			
0012A	**7-DAY**		**$_____**	**$_____**	
0012B	**14-DAY**		**$_____**	**$_____**	
0012C	**35-DAY**		**$_____**	**$_____**	
EDB/DBCP - 504		**(water)**			
0013A	**7-DAY**		**$_____**	**$_____**	
0013B	**14-DAY**		**$_____**	**$_____**	

0013C	35-DAY		$_____	$_____	
EDB/DBCP - 504		(soil)			
0014A	7-DAY		$_____	$_____	
0014B	14-DAY		$_____	$_____	
0014C	35-DAY		$_____	$_____	
TPH/gasoline - 8015		(water)			
0015A	7-DAY		$_____	$_____	
0015B	14-DAY		$_____	$_____	
0015C	35-DAY		$_____	$_____	
TPH/gasoline - 8015		(soil)			
0016A	7-DAY		$_____	$_____	
0016B	14-DAY		$_____	$_____	
0016C	35-DAY		$_____	$_____	
TPH/diesel - 8015		(water)			
0017A	7-DAY		$_____	$_____	
0017B	14-DAY		$_____	$_____	
0017C	35-DAY		$_____	$_____	
TPH/diesel - 8015		(soil)			
0018A	7-DAY		$_____	$_____	
0018B	14-DAY		$_____	$_____	
0018C	35-DAY		$_____	$_____	
OP PESTICIDES - 8141		(water)			
0019A	7-DAY		$_____	$_____	
0019B	14-DAY		$_____	$_____	
0019C	35-DAY		$_____	$_____	
OP PESTICIDES - 8141		(soil)			
0020A	7-DAY		$_____	$_____	
0020B	14-DAY		$_____	$_____	
0020C	35-DAY		$_____	$_____	

PHENOLS - 8040/8041		**(water)**			
0021A	**7-DAY**		**$_____**	**$_____**	
0021B	**14-DAY**		**$_____**	**$_____**	
0021C	**35-DAY**		**$_____**	**$_____**	
PHENOLS - 8040/8041		**(soil)**			
0022A	**7-DAY**		**$_____**	**$_____**	
0022B	**14-DAY**		**$_____**	**$_____**	
0022C	**35-DAY**		**$_____**	**$_____**	
PAHs - 8310		**(water)**			
0023A	**7-DAY**		**$_____**	**$_____**	
0023B	**14-DAY**		**$_____**	**$_____**	
0023C	**35-DAY**		**$_____**	**$_____**	
PAHs - 8310		**(soil)**			
0024A	**7-DAY**		**$_____**	**$_____**	
0024B	**14-DAY**		**$_____**	**$_____**	
0024C	**35-DAY**		**$_____**	**$_____**	
1,4-DIOXANE - SIM		**(water)**			
0025A	**7-DAY**		**$_____**	**$_____**	
0025B	**14-DAY**		**$_____**	**$_____**	
0025C	**35-DAY**		**$_____**	**$_____**	
AIR ANALYSES					
TO-14					
0026A	**7-DAY**		**$_____**	**$_____**	
0026B	**14-DAY**		**$_____**	**$_____**	
0026C	**35-DAY**		**$_____**	**$_____**	
TO-15					
0027A	**7-Day**		**$_____**	**$_____**	
0027B	**14-DAY**		**$_____**	**$_____**	

0027C	35-DAY		$_____	$_____	
Description					
INORGANIC ANALYSES					
METALS - 6010/7060A/7421/7740/7841			(water)		
0028A	7-DAY		$_____	$_____	
0028B	14-DAY		$_____	$_____	
0028C	35-DAY		$_____	$_____	
METALS - 6010/7060A/7421/7740/7841			(soil)		
0029A	7-DAY		$_____	$_____	
0029B	14-DAY		$_____	$_____	
0029C	35-DAY		$_____	$_____	
MERCURY - 7470A/7471A		(water)			
0030A	7-DAY		$_____	$_____	
0030B	14-DAY		$_____	$_____	
0030C	35-DAY		$_____	$_____	
MERCURY - 7470A/7471A		(soil)			
0031A	7-DAY		$_____	$_____	
0031B	14-DAY		$_____	$_____	
0031C	35-DAY		$_____	$_____	
CYANIDE - 9010B/9012A/9014		(water)			
0032A	7-DAY		$_____	$_____	
0032B	14-DAY		$_____	$_____	
0032C	35-DAY		$_____	$_____	
CYANIDE - 9010B/9012A/9014		(soil)			
0033A	7-DAY		$_____	$_____	
0033B	14-DAY		$_____	$_____	
0033C	35-DAY		$_____	$_____	

METALS - TITLE 22		**(water)**			
0034A	**7-DAY**		**$_____**	**$_____**	
0034B	**14-DAY**		**$_____**	**$_____**	
0034C	**35-DAY**		**$_____**	**$_____**	
METALS - TITLE 22		**(soil)**			
0035A	**7-DAY**		**$_____**	**$_____**	
0035B	**14-DAY**		**$_____**	**$_____**	
0035C	**35-DAY**		**$_____**	**$_____**	
TOTAL SUSPENDED SOLIDS (TSS) - 160.2				**(water)**	
0036A	**7-DAY**		**$_____**	**$_____**	
0036B	**14-DAY**		**$_____**	**$_____**	
0036C	**35-DAY**		**$_____**	**$_____**	
TOTAL DISSOVLED SOLIDS (TDS) - 160.1				**(water)**	
0037A	**7-DAY**		**$_____**	**$_____**	
0037B	**14-DAY**		**$_____**	**$_____**	
0037C	**35-DAY**		**$_____**	**$_____**	
AMMONIA - 350.1/350.3		**(water)**			
0038A	**7-DAY**		**$_____**	**$_____**	
0038B	**14-DAY**		**$_____**	**$_____**	
0038C	**35-DAY**		**$_____**	**$_____**	
ANIONS - 300.0 (chloride, flouride, nitrate, nitrite, ortho-phosphorus, sulfate, bromide) (water)					
0039A	**7-DAY**		**$_____**	**$_____**	
0039B	**14-DAY**		**$_____**	**$_____**	
0039C	**35-DAY**		**$_____**	**$_____**	
Description					

HARDNESS - 130.2		**(water)**			
0040A	**7-DAY**		**$_____**	**$_____**	
0040B	**14-DAY**		**$_____**	**$_____**	
0040C	**35-DAY**		**$_____**	**$_____**	
SULFIDE - 376.1		**(water)**			
0041A	**7-DAY**		**$_____**	**$_____**	
0041B	**14-DAY**		**$_____**	**$_____**	
0041C	**35-DAY**		**$_____**	**$_____**	
ALKALINITY - Standard Methods 2320			**(water)**		
0042A	**7-DAY**		**$_____**	**$_____**	
0042B	**14-DAY**		**$_____**	**$_____**	
0042C	**35-DAY**		**$_____**	**$_____**	
TOTAL ORGANIC CARBON (TOC) - 415.1/415.2/9060				**(water)**	
0043A	**7-DAY**		**$_____**	**$_____**	
0043B	**14-DAY**		**$_____**	**$_____**	
0043C	**35-DAY**		**$_____**	**$_____**	
TOTAL KJELDAHL NITROGEN - 351.1/351.4				**(water)**	
0044A	**7-DAY**		**$_____**	**$_____**	
0044B	**14-DAY**		**$_____**	**$_____**	
0044C	**35-DAY**		**$_____**	**$_____**	
PERCHLORATE - 300.0 modified		**(water)**			
0045A	**7-DAY**		**$_____**	**$_____**	
0045B	**14-DAY**		**$_____**	**$_____**	
0045C	**35-DAY**		**$_____**	**$_____**	
OIL & GREASE - 413.1/9070		**(water)**			
0046A	**7-DAY**		**$_____**	**$_____**	
0046B	**14-DAY**		**$_____**	**$_____**	
0046C	**35-DAY**		**$_____**	**$_____**	

OIL & GREASE - 413.1/9070		(soil)			
0047A	7-DAY		$_____	$_____	
0047B	14-DAY		$_____	$_____	
0047C	35-DAY		$_____	$_____	
pH - 9040/9045		(water)			
0048A	7-DAY		$_____	$_____	
0048B	14-DAY		$_____	$_____	
0048C	35-DAY		$_____	$_____	
pH - 9040/9045		(soil)			
0049A	7-DAY		$_____	$_____	
0049B	14-DAY		$_____	$_____	
0049C	35-DAY		$_____	$_____	
HEXAVALENT CHROMIUM - 418.17196/7197				(water)	
0050A	7-DAY		$_____	$_____	
0050B	14-DAY		$	$_____	
0050C	35-DAY		$_____	$_____	
HEXAVALENT CHROMIUM - 418.17196/7197				(soil)	
0051A	7-DAY		$_____	$_____	
0051B	14-DAY		$_____	$_____	
0051C	35-DAY		$_____	$_____	
Description					
PREPARATION/EXTRATION METHODS					
TCLP - 1311		(water)			
0052	metals	2	$_____	$_____	
0053	volatiles	2	$_____	$_____	
0054	semi-volatiles	2	$_____	$_____	

TCLP - 1311		**(soil)**			
0055	**metals**	**2**	**$_____**	**$_____**	
0056	**volatiles**	**2**	**$_____**	**$_____**	
0057	**semi-volatiles**	**2**	**$_____**	**$_____**	
WET -		**(water)**			
0058	**metals**	**2**	**$_____**	**$_____**	
0059	**volatiles**	**2**	**$_____**	**$_____**	
0060	**semi-volatiles**	**2**	**$_____**	**$_____**	
WET -		**(soil)**			
0061	**metals**	**2**	**$_____**	**$_____**	
0062	**volatiles**	**2**	**$_____**	**$_____**	
0063	**semi-volatiles**	**2**	**$_____**	**$_____**	

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

C.1 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, SUPPLIES, SUPERVISION AND EQUIPMENT NECESSARY TO PROVIDE LABORATORY ANALYTICAL SERVICES FOR ORGANIC AND INORGANIC SAMPLES, IN ACCORDANCE WITH THE STATEMENT OF WORK IN SECTION J, ATTACHMENT I.

C.2 NOTICE REGARDING PROHIBITED CONTRACTOR ACTIVITIES ON ENVIRONMENTAL PROTECTION AGENCY (EPA) CONTRACTS (EP 52.000-000) (NOV 1994)

The Contractor shall not perform any of the following activities on behalf of EPA in connection with this contract:

1. The actual preparation of Congressional testimony.

2. The interviewing or hiring of individuals for employment at EPA.

3. Developing and/or writing of Position Descriptions and Performance Standards.

4. The actual determination of Agency policy.

5. Participating as a voting member on a Performance Evaluation Board; participating in and/or attending Award Fee meetings.

6. Preparing Award Fee Letters, even under typing services contracts.

7. The actual preparation of Award Fee Plans.

8. The preparation of documents on EPA Letterhead other than routine administrative correspondence.

9. Reviewing vouchers and invoices for the purposes of determining whether costs, hours, and work performed are reasonable.

10. The preparation of Statements of Work, Work Assignments, Technical Direction Documents, Delivery Orders, or any other work issuance document under a contract that the contractor is performing or may perform. Such a work issuance document, prepared by an EPA prime contractor under an EPA prime contract for its subcontractor, is exempt from this prohibition.

11. The actual preparation of responses to audit reports from the Inspector General, General Accounting Office, or other auditing entities.

12. Preparing responses to Congressional correspondence.

13. The actual preparation of responses to Freedom of Information Act requests, other than routine, non-judgmental correspondence.

14. Any contract which authorizes a contractor to represent itself as EPA to outside parties.

15. Conducting administrative hearings.

16. Reviewing findings concerning the eligibility of EPA employees for security clearances.

17. The actual preparation of an office's official budget request.

C.3 INCORPORATION OF CONTRACTOR'S TECHNICAL PROPOSAL (EP 52.210-120) (APR 1984)

The Contractor's technical proposal entitled, "_____ _____" dated _____, is incorporated by reference and made a part of this contract. In the event of any inconsistency between the provisions of this contract and the

Contractor's technical proposal, the contract provisions take precedence.

C.4 COMPLIANCE WITH EPA POLICIES FOR INFORMATION RESOURCES MANAGEMENT (EPAAR 1552.211-79) (FEB 1998)

(a) Definition. Information Resources Management (IRM) is defined as any planning, budgeting, organizing, directing, training, promoting, controlling, and managing activities associated with the burden, collection, creation, use and dissemination of information. IRM includes both information itself, and the management of information and related resources such as personnel, equipment, funds, and technology. Examples of these services include but are not limited to the following:

(1) The acquisition, creation, or modification of a computer program or automated data base for delivery to EPA or use by EPA or contractors operating EPA programs.

(2) The analysis of requirements for, study of the feasibility of, evaluation of alternatives for, or design and development of a computer program or automated data base for use by EPA or contractors operating EPA programs.

(3) Services that provide EPA personnel access to or use of computer or word processing equipment, software, or related services.

(4) Services that provide EPA personnel access to or use of: Data communications; electronic messaging services or capabilities; electronic bulletin boards, or other forms of electronic information dissemination; electronic record-keeping; or any other automated information services.

(5) Services that are subject to the Brooks Act of 1965, as amended (Pub. L. 89-306).

(b) General. The Contractor shall perform any IRM related work under this contract in accordance with the IRM policies, standards and procedures set forth in this clause and noted below. Upon receipt of a work request (i.e. delivery order or work assignment), the Contractor shall check this listing of directives (see paragraph (d) for electronic access). The applicable directives for performance of the work request are those in effect on the date of issuance of the work request.

(1) IRM Policies, Standards and Procedures. The 2100 Series (2100-2199) of the Agency's Directive System contains the majority of the Agency's IRM policies, standards and procedures.

(2) Groundwater Program IRM Requirement. A contractor performing any work related to collecting Groundwater data; or developing or enhancing data bases containing Groundwater quality data shall comply with EPA Order 7500.1A - Minimum Set of Data Elements for Groundwater.

(3) EPA Computing and Telecommunications Services. The Enterprise Technology Services Division (ETSD) Operational Directives Manual contains procedural information about the operation of the Agency's computing and telecommunications services. Contractors performing work for the Agency's National Computer Center or those who are developing systems which will be

operating on the Agency's national platforms must comply with procedures established in the Manual. (This document is only available through electronic access.)

(c) Printed Documents. Documents listed in (b)(1) and (b)(2) may be obtained from:

U.S. Environmental Protection Agency
Office of Administration
Facilities Management and Services Division
Distribution Section
Mail Code: 3204
401 M Street, S.W.
Washington, D.C. 20460
Phone: (202) 260-5797

(d) Electronic Access.

(1) Internet. A complete listing, including full text, of documents included in the 2100 Series of the Agency's Directive System, as well as the two other EPA documents noted in this clause, is maintained on the EPA Public Access Server on the Internet. **Gopher Access:** gopher.epa.gov is the address to access the EPA Gopher. Select `menu keyword search' from the menu and search on the term `IRM Policy'. Look for *IRM Policy, Standards and Guidance*. **World Wide Web Access:** http://www.epa.gov is the address for the EPA's www homepage. From the homepage, search on the term `IRM Policy' and look for *IRM Policy, Standards and Guidance*.

(2) Dial-Up Modem. All documents, including the listing, are available for browsing and electronic download through a dial-up modem. Dial (919) 558-0335 for access to the menu that contains the listing for EPA policies. Set the communication parameters to 8 data bits, no parity, 1 stop bit (8,N,1) Full Duplex, and the emulator to VT-100. The information is the same whether accessed through dial-up or the Internet. For technical assistance, call 1-800-334-2405.

C.5 ACQUISITION AND USE OF ENVIRONMENTALLY PREFERABLE PRODUCTS AND SERVICES (EP-S 97-1) (APR 1997)

(a) Executive Order 12873 of October 20, 1993, entitled “Federal Acquisition, Recycling, and Waste Prevention” and Section 6002 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended (42 U.S.C. 6962, Pub L. 94-580, 90 Stat. 2822) require Federal agencies to procure designated items with the highest recovered materials content practicable.

(b) In the performance of this contract, the Contractor shall comply with the requirements of the following issuances:

(1) Title 40 of the Code of Federal Regulations, Part 247, Comprehensive Guideline for Procurement of Products Containing Recovered Materials (CPG), which designates items that are or can be made with recovered materials, and its companion pieces, the Recovered Materials Advisory notices (RMANs). THE CPG and RMANs provide recommended procurement practices, including recommended recovered material content levels, for purchasing products designated in the CPG. The Contractor shall comply with these recommendations, and such other

CPG revisions and RMANs as the Environmental Protection Agency (EPA) may issue with respect to the procurement of products that contain recovered materials. (Copies of the CPG or RMANs, as well as information on manufacturers and vendors of designated items may be obtained by calling EPA's RCRA Hotline at (800) 424-9346, or, in the Washington, D.C., metropolitan area, at (703) 412-9810.)

(2) In complying with the requirements of paragraph (b), the Contractor shall coordinate its concerns and program guidance with EPA's Recycling Coordinator.

(c) The Contractor shall prepare and submit reports on the purchase of products containing recovered materials from time to time in accordance with written direction (e.g., in specified format) from the EPA Recycling Coordinator through the Contracting Officer. Reports shall be submitted to the EPA Recycling Coordinator, with a copy to the Contracting Officer, Mail Code 3204, Washington, D.C. 20460

SECTION D - PACKAGING AND MARKING

1) The Contractor shall submit all deliverables, including reports, citing the applicable contract number. Reference Table 1 of the Statement of Work for distribution and schedule requirements.

2) The Contractor shall prepare, analyze and ship samples in accordance with the statement of work herein.

SECTION E - INSPECTION AND ACCEPTANCE

E.1 INSPECTION OF SERVICES—-FIXED-PRICE (FAR 52.246-4) (AUG 1996)

(a) Definitions. “Services”, as used in this clause, includes services performed, workmanship, and material furnished or utilized in the performance of services.

(b) The contractor shall provide and maintain an inspection system acceptable to the Government covering the services under this contract. Complete records of all inspection work performed by the contractor shall be maintained and made available to the Government during contract performance and for as long afterwards as the contract requires.

(c) The Government has the right to inspect and test all services called for by the contract, to the extent practicable at all times and places during the term of the contract. The Government shall perform inspections and tests in a manner that will not unduly delay the work.

(d) If the Government performs inspections or tests on the premises of the Contractor or a subcontractor, the Contractor shall furnish, and shall require subcontractors to furnish, at no increase in contract price, all reasonable facilities and assistance for the safe and convenient performance of these duties.

(e) If any of the services do not conform with contract requirements, the Government may require the contractor to perform the services again in conformity with contract requirements, at no increase in contract amount. When the defects in services cannot be corrected by reperformance, the Government may---

(1) Require the Contractor to take necessary action to ensure that future performance conforms to contract requirements; and

(2) Reduce the contract price to reflect the reduced value of the services performed.

(f) If the Contractor fails to promptly perform the services again or to take the necessary action to ensure future performance in conformity with contract requirements, the Government may---

(1) By contract or otherwise, perform the services and charge to the Contractor any cost incurred by the Government that is directly related to the performance of such service; or

(2) Terminate the contract for default.

E.2 INSPECTION AND ACCEPTANCE (EP 52.246-100) (APR 1984)

(a) The Contracting Officer or the duly authorized representative will perform inspection and acceptance of materials and services to be provided.

(b) For the purposes of this clause, **the EPA Project Officer (Reference Section G, Clause G.3),**is the authorized representative of the Contracting Officer.

(c) Inspection and acceptance will be performed at: U.S. EPA, 75 Hawthorne Street, San Francisco, CA 94105.

SECTION F - DELIVERIES OR PERFORMANCE

F.1 PERIOD OF PERFORMANCE (EPAAR 1552.212-140) (APR 1984)

The period of performance of this contract will be three years, if all options are exercised, from _____ to _____,inclusive of all required sample analyses, reports and deliverables:

(a) Base Period is one year, from _____to_____;
(b) Option Period #1 is one year, from_____to_____,if exercised;and,
(c) Option Period #2 is one year, from_____to_____,if exercised.

F.2 NOTICE Listing Contract Clauses Incorporated by Reference
NOTICE:

The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.242-15	AUG 1989	STOP WORK ORDER
52.247-34	NOV 1991	F.O.B. DESTINATION

F.3 REPORTING REQUIREMENTS AND DELIVERABLES: Reference the Statement of Work in Section J, Attachment 1, Table 1.

F.4 USE OF RECOVERED MATERIALS IN PAPER AND PAPER PRODUCTS
(EP 52.210-150) (JUN 1991)

(a) If the Contractor is required under this contract to deliver any of the paper and paper products listed below, all such items delivered shall meet the minimum content standards for recovered materials, postconsumer recovered materials, or waste paper set forth below in paragraph (b).

(1) Recovered materials are defined as waste material and by-products that have been recovered or diverted from solid waste, not including those materials and by-products generated from, and commonly reused within, an original manufacturing process.

(2) Postconsumer recovered materials are defined as waste materials recovered from retail stores, office buildings, homes, and so forth after they passed through their end usage as a consumer item.

(3) Waste paper is defined as all items from the first two categories above in addition to forest residues, and manufacturing of other wastes.

(b) Unless otherwise directed by the Contracting Officer, the contractor shall use “High Grade Bleached Printing and Writing Papers”as defined in this clause to produce all progress reports, draft reports, final reports, any other products required to be delivered to the Government under this contract.

EPA MINIMUM CONTENT STANDARDS FOR SELECTED PAPER AND PAPER PRODUCTS

	Minimum % Recovered Materials	Minimum % Postconsumer Recovered Materials	Minimum % Waste Paper
NEWSPRINT			40
HIGH GRADE BLEACHED PRINTINGN AND WRITING PAPERS:			
Offset printing			50
Mimeo and duplicator paper			50
Writing (stationery)			50
Office paper (e.g. note pads)			50
Paper for high speed copiers			50
Envelopes			50
Form bond including computer paper and carbonless			50
Book papers			50
Bond papers			50
Ledger			50
Cover stock			50
Cotton Fiber papers	25		50
TISSUE PRODUCTS:			
Toilet tissue		20	
Paper towels		40	
Paper napkins		30	
Facial tissue		5	
Doilies		40	
Industrial wipes		0	
UNBLEACHED PACKAGING			
Corrugated boxes		35	
Fiber boxes		35	
Brown papers (e.g. bags)		5	
RECYCLED PAPERBOARD			
Recycled paperboard products		80	
Pad backing		90	

F.5 USE OF DOUBLE-SIDED COPYING IN THE SUBMISSION OF REPORTS
(EP 52.210-160) (JUL 1990)

(a) For the purposes of this clause, “double sided copying”means copying two one-sided originals on to the front and back side of one sheet of paper.

(b) Unless otherwise directed by the Contracting Officer, the Contractor shall use double-sided copying to reproduce any progress report, draft report or final report in response to this contract.

SECTION G - CONTRACT ADMINISTRATION DATA

G.1 CONTRACT ADMINISTRATION REPRESENTATIVES (EP 52.242-100) (AUG 1984)

Project Officer(s) for this contract:

Project Officer: To Be Determined at Time of Award
U.S. EPA - Region IX
75 Hawthorne St.
San Francisco, CA 94105
Mail Code: PMD-3
Telephone: 415/744-1499
Email Address:

Alternate Project Officer: To Be Determined at Time of Award

Administrative Contracting Officer:
David Katzki at address shown above for PO
Mail Code: PMD-8
Telephone: 415/744-1615
Email Address: katzki.david@epa.gov

Contract Specialist(s) responsible for administering this contract:

Jeri Simmons at address shown above for PO
Mail Code: PMD-8
Telephone: 415/744-1616
Email Address: simmons.jeri@epa.gov

G.2 PAYMENT

Payment will be made monthly based on work completed (see Schedule, Section B). Reference the following clauses in the contract related to payment:

G.3 SUBMISSION OF INVOICES

Please submit an ORIGINAL and TWO COPIES of the Invoice, in accordance with Clause G.2 above, as follows (be sure to cite the Contract No. on the Invoice):

(a) Send the ORIGINAL to:
Environmental Protection Agency - RTP
Financial Management Division (MD-32)
Attn: Accounts Payable Branch
Research Triangle Park, NC 27711

(b) Submit one copy each to the EPA PO and CS shown above in Clause G.1.

G.4 SUBMISSION OF INVOICES - ALTERNATE 1 (SEP 1990)
(EPAAR 1552.232-70) (JUN 1996)

G.5 DISTRIBUTION OF DELIVERABLES

All technical deliverables and reports shall be sent to the EPA PO, with a copy of the transmittal letter to the CS, at the addresses above in Clause G.1. Reference the listing of deliverables in Table 1 of the Statement of Work.

All contractual and administrative correspondence should be addressed to the Contracting Officer and sent to the CS, with a copy to the EPA PO.

G.6 ORDERING
(FAR 52.216-18) (OCT 1995)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the schedule. Such orders may be issued from _____ _____ through _____.
(b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.
(c) If mailed, a delivery order or task order is considered “issued”when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

G.7 SAMPLES
For the purposes of this contract, samples are Government property until consumed and/or disposed of by the Contractor during performance of this contract. Reference the property requirements of subject contract in Section I, FAR Clause 52.245-5.

SECTION H - SPECIAL CONTRACT REQUIREMENTS

H.1 NOTICE Listing Contract Clauses Incorporated by Reference

NOTICE:

The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.236-7	NOV 1991	PERMITS AND RESPONSIBILITIES
52.236-8	APR 1984	OTHER CONTRACTS
52.236-13	NOV 1991	ACCIDENT PREVENTION

H.2 OPTION TO EXTEND THE EFFECTIVE PERIOD OF THE CONTRACT–INDEFINITE DELIVERY/INDEFINITE QUANTITY CONTRACT

(EPAAR 1552.217-76) (APR 1984) DEVIATION

(a) The Government has the option to extend the effective period of this contract for two (2) additional periods. If more than sixty (60) days remain in the contract effective period, the Government, without prior written notification, may exercise this option by issuing a contract modification. To unilaterally exercise these options within the last 60 days of the effective period, the Government must issue written notification of its intent to exercise the options prior to that last 60-day period. This preliminary notification does not commit the Government to exercising the option.

(b) If the options are exercised, the “Minimum and Maximum Contract Amount” clause will be modified to relfect new and separate maximum amounts:

Period	Start Date	End Date
Option Period 1	**tbd**	**tbd**
Option Period 2	**tbd**	**tbd**

H.3 INDEFINITE QUANTITY

(FAR 52.216-22) (OCT 1995)

(a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."

(c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; *provided,* that the Contractor shall not be required to make any deliveries under this contract after_____

H.4 FIXED RATES FOR SERVICES - INDEFINITE DELIVERY/INDEFINITE QUANTITY CONTRACT (EPAAR 1552.216-73) (APR 1984)

Personnel Classification	Skill Level	Estimated Direct Labor Hours	Fixed Hourly Rate	Total

The rate, or rates, set forth above cover all expenses, including report preparation, salaries, overhead, general and administrative expenses, and profit.

The Contractor shall voucher for only the time of the Personnel whose services are applied directly to the work called for in individual Delivery Orders and accepted by the EPA Project Officer. The Government shall pay the Contractor for the life of a delivery order at rates in effect when the delivery order was issued, even if performance under the delivery order crosses into another period. The Contractor shall maintain time and labor distribution records for all employees who work under the contract. These records must document time worked and work performed by each individual on all Delivery Orders.

H.5 PRINTING (EPAAR 1552.208-70) (DEC 1993) DEVIATION

(a) Definitions.

"Printing" is the process of composition, platemaking, presswork, binding,

and microform; or the end items produced by such processes and equipment.

"Composition" applies to the setting of type by hot-metal casting, photo typesetting, or electronic character generating devices for the purpose of producing camera copy, negatives, a plate or image to be used in the production of printing or microform.

"Camera copy" (or "camera-ready copy") is a final document suitable for printing/duplication.

"Desktop Publishing" is a method of composition using computers with the final output or generation of camera copy done by a laser printer. This is not considered "printing." However, if the output from desktop publishing is being sent to a typesetting device (i.e., Linotronic) with camera copy being produced in either paper or negative format, these services are considered "printing".

"Microform" is any product produced in a miniaturized image format, for mass or general distribution and as a substitute for conventionally printed material. Microform services are classified as printing services and includes microfiche and microfilm. The contractor may make up to two sets of microform files for archival purposes at the end of the contract period of performance.

"Duplication" means the making of one-color (black) copies on photocopy machines employing electrostatic, thermal, or other processes without using an intermediary such as a negative or plate.

"Requirement" means an individual photocopying task. (There may be multiple requirements under a Work Assignment or Delivery Order. Each requirement would be subject to the photocopying limitation of 5,000 copies of one page or 25,000 copies of multiple pages in the aggregate per requirement.)

(b) Prohibition.

The Contractor shall not engage in, nor subcontract for, any printing or multi-color duplication in connection with the performance of work under this contract. Duplication of more than 5,000 copies of one page or more than 25,000 copies of multiple pages in the aggregate per requirement constitutes printing.

(c) Affirmative Requirements.

(1) Unless otherwise directed by the Contracting Officer, the Contractor shall use double-sided copying to produce any progress report, draft report or final report.

(2) Unless otherwise directed by the Contracting Officer, the Contractor shall use recycled paper for reports delivered to the Agency which meet the minimum content standards for paper and paper products as set forth in EPA Procurement Guidelines (40 CFR 250, June 22, 1988).

(d) Permitted Contractor Activities.

(1) The prohibitions contained in paragraph (b) do not preclude writing, editing, or preparing manuscript copy, or preparing related illustrative

material to a final document (camera-ready copy) using desktop publishing.

(2) The Contractor may perform a requirement involving the duplication of less than 5,000 copies of only one page, or less than 25,000 copies of multiple pages in the aggregate using one color (black), such pages not exceeding the maximum image size of 10 3/4 by 14 1/4 inches. Duplication services below these thresholds are not considered printing. If performance of the contract will require duplication in excess of these limits, contractors must immediately notify the Contracting Officer in writing. EPA may then seek a waiver from the Joint Committee on Printing, U.S. Congress.

(e) Violations.

The Contractor may not engage in, nor subcontract for, any printing in connection with the performance of work under the contract. The cost of any printing services in violation of this clause will be disallowed, or not accepted by the Government.

(f) Flowdown Provision.

The Contractor shall include in each subcontract which may involve a requirement for any printing/duplicating/copying a provision substantially the same as this clause.

H.6 ORGANIZATIONAL CONFLICTS OF INTEREST
(EPAAR 1552.209-71) (MAY 1994)

(a) The Contractor warrants that, to the best of the Contractor's knowledge and belief, there are no relevant facts or circumstances which could give rise to an organizational conflict of interest, as defined in FAR Subpart 9.5, or that the Contractor has disclosed all such relevant information.

(b) Prior to commencement of any work, the Contractor agrees to notify the Contracting Officer immediately that, to the best of its knowledge and belief, no actual or potential conflict of interest exists or to identify to the Contracting Officer any actual or potential conflict of interest the firm may have. In emergency situations, however, work may begin but notification shall be made within five (5) working days.

(c) The Contractor agrees that if an actual or potential organizational conflict of interest is identified during performance, the Contractor will immediately make a full disclosure in writing to the Contracting Officer. This disclosure shall include a description of actions which the Contractor has taken or proposes to take, after consultation with the Contracting Officer, to avoid, mitigate, or neutralize the actual or potential conflict of interest. The Contractor shall continue performance until notified by the Contracting Officer of any contrary action to be taken.

(d) Remedies - The EPA may terminate this contract for convenience, in whole or in part, if it deems such termination necessary to avoid an organizational conflict of interest. If the Contractor was aware of a potential organizational conflict of interest prior to award or discovered an actual or potential conflict after award and did not disclose it or misrepresented relevant information to the Contracting Officer, the Government may terminate the contract for default, debar the Contractor from Government contracting, or

pursue such other remedies as may be permitted by law or this contract.

(e) The Contractor agrees to insert in each subcontract or consultant agreement placed hereunder, except for subcontracts or consultant agreements for well drilling, fence erecting, plumbing, utility hookups, security guard services, or electrical services, provisions which shall conform substantially to the language of this clause, including this paragraph (e), unless otherwise authorized by the Contracting Officer.

H.7 NOTIFICATION OF CONFLICTS OF INTEREST REGARDING PERSONNEL
(EPAAR 1552.209-73) (MAY 1994)

(a) In addition to the requirements of the contract clause entitled "Organizational Conflicts of Interest", the following provisions with regard to employee personnel performing under this contract shall apply until the earlier of the following two dates: the termination date of the affected employee(s) or the expiration date of the contract.

(b) The Contractor agrees to notify immediately the EPA Project Officer and the Contracting Officer of (1) any actual or potential personal conflict of interest with regard to any of its employees working on or having access to information regarding this contract, or (2) any such conflicts concerning subcontractor employees or consultants working on or having access to information regarding this contract, when such conflicts have been reported to the Contractor. A personal conflict of interest is defined as a relationship of an employee, subcontractor employee, or consultant with an entity that may impair the objectivity of th eemployee, subcontractor employee, or consultant in performing the contract work.

{c} The Contractor agrees to notify the Project Officer and Contracting Officer prior to incurring costs for the employee's work when an employee may have a personal conflict of interest. In the event that the personal conflict of interest does not become known until after performance on the contract begins, the Contractor shall immediately notify the Contracting Officer of the personal conflict of interest. The Contractor shall continue performance of this contract until notified by the Contracting Officer of the appropriate action to be taken.

(d) The Contractor agrees to insert in any subcontract or consultant agreement placed hereunder, except for subcontracts or consultant agreements for well drilling, fence erecting, plumbing, utility hookups, security guard services, or electrical services, provisions which shall conform substantially to the language of this clause, including this paragraph (d), unless otherwise authorized by the Contracting Officer.

H.8 ANNUAL CERTIFICATION
(EPAAR 1552.210-80) (MAY 1994)

The Contractor shall submit an annual conflict of interest certification to the Contracting Officer. In this certification, the Contractor shall certify annually that, to the best of the Contractor's knowledge and belief, all actual or potential organizational conflicts of interest have been reported to EPA. In addition, in this annual certification, the Contractor shall certify that it has informed it personnel who perform work under EPA contracts or relating to EPA contracts of their obligation to report personal and

organizational conflicts of interest to the Contractor. Such certification must be signed by a senior executive of the company and submitted in accordance with instructions provided by the Contracting Officer. The initial certification shall cover the one-year period from the date of contract award, and all subsequent certifications shall cover successive annual periods thereafter, until expiration or termination of the contract. The certification must be received by the Contracting Officer no later than 45 days after the close of the certification period covered.

H.9 UTILIZATION OF RURAL AREA SMALL BUSINESS CONCERNS (EP 52.219-110) (APR 1990)

(a) (1) "Rural area small business concern," as used in this clause, means a small business concern that is located and conducts its principal operations in a rural geographic area (county or parish) listed in the Small Business Administration's Listing of Non-Metropolitan Rural Counties by State.

(2) "Small business concern," as used in this clause, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on government contracts, and qualified as a small business under the criteria and size standard in 13 CFR 121.

(b) It is the policy of the Environmental Protection Agency (EPA) that rural area small business concerns shall have the maximum practicable opportunity to participate in performing contracts awarded by EPA.

(c) The contractor shall use its best efforts to give rural area small business concerns the opportunity to participate in the subcontracts it awards to the fullest extent consistent with efficient performance of this contract.

(d) The contractor shall incorporate the substance of this clause in any subcontract that may provide for additional subcontracting opportunities.

H.10 UTILIZATION OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (EP 52.219-115) (JUL 1991)

(a) It is the Policy of the Environmental Protection Agency that historically black colleges and universities shall have the maximum practicable opportunity to participate in performing contracts awarded by the Agency.

(b) The Contractor shall use its best efforts to give historically black colleges and universities the opportunity to participate in any subcontracts awarded to the fullest extent consistent with efficient performance of this contract.

(c) The contractor shall incorporate the substance of this clause in any subcontract which may provide for additional subcontracting opportunities.

H.11 PROJECT EMPLOYEE CONFIDENTIALITY AGREEMENT (EPAAR 1552.227-76) (MAY 1994)

(a) The Contractor recognizes that Contractor employees in performing this contract may have access to data, either provided by the Government or first

generated during contract performance, of a sensitive nature which should not be released to the public without Environmental Protection Agency (EPA) approval. Therefore, the Contractor agrees to obtain confidentiality agreements from all of its employees working on requirements under this contract.

(b) Such agreements shall contain provisions which stipulate that each employee agrees that the employee will not disclose, either in whole or in part, to any entity external to EPA, the Department of Justice, or the Contractor, any information or data (as defined in FAR Section 27.401) provided by the Government or first generated by the Contractor under this contract, any site-specific cost information, or any enforcement strategy without first obtaining the written permission of the EPA Contracting Officer. If a contractor, through an employee or otherwise, is subpoenaed to testify or produce documents, which could result in such disclosure, the Contractor must provide immediate advance notification to the EPA so that the EPA can authorize such disclosure or have the opportunity to take action to prevent such disclosure. Such agreements shall be effective for the life of the contract and for a period of five (5) years after completion of the contract.

(c) The EPA may terminate this contract for convenience, in whole or in part, if it deems such termination necessary to prevent the unauthorized disclosure of information to outside entities. If such a disclosure occurs without the written permission of the EPA Contracting Officer, the Government may terminate the contract, for default or convenience, or pursue other remedies as may be permitted by law or this contract.

(d) The Contractor further agrees to insert in any subcontract or consultant agreement placed hereunder, except for subcontracts or consultant agreements for well drilling, fence erecting, plumbing, utility hookups, security guard services, or electrical services, provisions which shall conform substantially to the language of this clause, including this paragraph, unless otherwise authorized by the Contracting Officer.

H.12 INSURANCE--LIABILITY TO THIRD PERSONS

(1) Except as provided in paragraph (2) immediately following, the Contractor shall provide and maintain workers' compensation, employer's liability, comprehensive general liability (bodily injury), comprehensive automobile liability (bodily injury and property damage) insurance, and such other insurance as the Contracting Officer may require under this contract.

(2) The Contractor may, with the approval of the Contracting Officer, maintain a self-insurance program; provided that, with respect to workers' compensation, the Contractor is qualified pursuant to statutory authority.

(3) Coverage for insurance described in paragraph(1) above shall be in accordance with the amounts shown in FAR 28.307-2.

H.13 SCREENING BUSINESS INFORMATION FOR CLAIMS OF CONFIDENTIALITY (EPAAR 1552.235-70) (APR 1984)

(a) Whenever collecting information under this contract, the Contractor agrees to comply with the following requirements:

(1) If the Contractor collects information from public sources, such as books, reports, journals, periodicals, public records, or other sources that are available to the public without restriction, the Contractor shall submit a list of these sources to the appropriate program office at the time the information is initially submitted to EPA. The Contractor shall identify the information according to source.

(2) If the Contractor collects information from a State or local Government or from a Federal agency, the Contractor shall submit a list of these sources to the appropriate program office at the time the information is initially submitted to EPA. The Contractor shall identify the information according to source.

(3) If the Contractor collects information directly from a business or from a source that represents a business or businesses, such as a trade association:

(i) Before asking for the information, the Contractor shall identify itself, explain that it is performing contractual work for the Environmental Protection Agency, identify the information that it is seeking to collect, explain what will be done with the information, and give the following notice:

(A) You may, if you desire, assert a business confidentiality claim covering part or all of the information. If you do assert a claim, the information will be disclosed by EPA only to the extent, and by means of the procedures, set forth in 40 CFR Part 2, Subpart B.

(B) If no such claim is made at the time this information is received by the Contractor, it may be made available to the public by the Environmental Protection Agency without further notice to you.

(C) The Contractor shall, in accordance with FAR Part 9, execute a written agreement regarding the limitations of the use of this information and forward a copy of the agreement to the Contracting Officer.

(ii) Upon receiving the information, the Contractor shall make a written notation that the notice set out above was given to the source, by whom, in what form, and on what date.

(iii) At the time the Contractor initially submits the information to the appropriate program office, the Contractor shall submit a list of these sources, identify the information according to source, and indicate whether the source made any confidentiality claim and the nature and extent of the claim.

(b) The Contractor shall keep all information collected from nonpublic sources confidential in accordance with the clause in this contract entitled "Treatment of Confidential Business Information" as if it had been furnished to the Contractor by EPA.

(c) The Contractor agrees to obtain the written consent of the Contracting Officer, after a written determination by the appropriate program office, prior to entering into any subcontract that will require the subcontractor to collect information. The Contractor agrees to include this clause, including this paragraph (c), and the clause entitled "Treatment of Confidential

Business Information" in all subcontracts awarded pursuant to this contract that require the subcontractor to collect information.

H.14 TREATMENT OF CONFIDENTIAL BUSINESS INFORMATION (EPAAR 1552.235-71) (APR 1984)

(a) The Contracting Officer, after a written determination by the appropriate program office, may disclose confidential business information (CBI) to the Contractor necessary to carry out the work required under this contract. The Contractor agrees to use the CBI only under the following conditions:

(1) The Contractor and Contractor's employees shall: (i) use the CBI only for the purposes of carrying out the work required by the contract; (ii) not disclose the information to anyone other than properly cleared EPA employees without the prior written approval of the Assistant General Counsel for Contracts and Information Law; and (iii) return to the Contracting Officer all copies of the information, and any abstracts or excerpts therefrom, upon request by the Contracting Officer, whenever the information is no longer required by the Contractor for the performance of the work required by the contract, or upon completion of the contract.

(2) The Contractor shall obtain a written agreement to honor the above limitations from each of the Contractor's employees who will have access to the information before the employee is allowed access.

(3) The Contractor agrees that these contract conditions concerning the use and disclosure of CBI are included for the benefit of, and shall be enforceable by, both EPA and any affected businesses having a proprietary interest in the information.

(4) The Contractor shall not use any CBI supplied by EPA or obtained during performance hereunder to compete with any business to which the CBI relates.

(b) The Contractor agrees to obtain the written consent of the CO, after a written determination by the appropriate program office, prior to entering into any subcontract that will involve the disclosure of CBI by the Contractor to the subcontractor. The Contractor agrees to include this clause, including this paragraph (b), in all subcontracts awarded pursuant to this contract that require the furnishing of CBI to the subcontractor.

H.15 RELEASE OF CONTRACTOR CONFIDENTIAL BUSINESS INFORMATION (EPAAR 1552.235-79) (APR 1996)

(a) The Environmental Protection Agency (EPA) may find it necessary to release information submitted by the Contractor either in response to this solicitation or pursuant to the provisions of this contract, to individuals not employed by EPA. Business information that is ordinarily entitled to confidential treatment under existing Agency regulations (40 C.F.R. Part 2) may be included in the information released to these individuals. Accordingly, by submission of this proposal or signature on this contract or other contracts, the Contractor hereby consents to a limited release of its confidential business information (CBI).

(b) Possible circumstances where the Agency may release the Contractor's CBI include, but are not limited to the following:

(1) To other Agency contractors tasked with assisting the Agency in the recovery of Federal funds expended pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. Sec. 9607, as amended, (CERCLA or Superfund);

(2) To the U.S. Department of Justice (DOJ) and contractors employed by DOJ for use in advising the Agency and representing the Agency in procedures for the recovery of Superfund expenditures;

(3) To parties liable, or potentially liable, for costs under CERCLA Sec. 107 (42 U.S.C. Sec. 9607), et al, and their insurers (Potentially Responsible Parties) for purposes of facilitating settlement or litigation of claims against such parties;

(4) To other Agency contractors who, for purposes of performing the work required under the respective contracts, require access to information the Agency obtained under the Clean Air Act (42 U.S.C. 7401 et seq.); the Federal Water Pollution Control Act (33 U.S.C.1251 et seq.); the Safe Drinking Water Act (42 U.S.C. 300f et seq.); the Federal Insecticide, Fungicide and Rodenticide Act (7 U.S.C. 136 et seq.); the Resource Conservation and Recovery Act (42 U.S.C. 6901 et seq.); the Toxic Substances Control Act (15 U.S.C. 2601 et seq.); or the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 et seq.);

(5) To other Agency contractors tasked with assisting the Agency in handling and processing information and documents in the administration of Agency contracts, such as providing both preaward and post award audit support and specialized technical support to the Agency's technical evaluation panels;

(6) To employees of grantees working at EPA under the Senior Environmental Employment (SEE) Program;

(7) To Speaker of the House, President of the Senate, or Chairman of a Committee or Subcommittee;

(8) To entities such as the General Accounting Office, boards of contract appeals, and the Courts in the resolution of solicitation or contract protests and disputes;

(9) To Agency contractor employees engaged in information systems analysis, development, operation, and maintenance, including performing data processing and management functions for the Agency; and

(10) Pursuant to a court order or court-supervised agreement.

(c) The Agency recognizes an obligation to protect the contractor from competitive harm that may result from the release of such information to a competitor. (See also the clauses in this document entitled "Screening Business Information for Claims of Confidentiality" and "Treatment of Confidential Business Information.") Except where otherwise provided by law, the Agency will permit the release of CBI under subparagraphs (1), (3), (4), (5), (6), or (9) only pursuant to a confidentiality agreement.

(d) With respect to contractors, 1552.235-71 will be used as the confidentiality agreement. With respect to Potentially Responsible Parties, such confidentiality agreements may permit further disclosure to other entities where necessary to further settlement or litigation of claims under CERCLA. Such entities include, but are not limited to accounting firms and technical experts able to analyze the information, provided that they also agree to be bound by an appropriate confidentiality agreement.

(e) This clause does not authorize the Agency to release the Contractor's CBI to the public pursuant to a request filed under the Freedom of Information Act.

(f) The Contractor agrees to include this clause, including this paragraph (f), in all subcontracts at all levels awarded pursuant to this contract that require the furnishing of confidential business information by the subcontractor.

H.16 TECHNICAL DIRECTION (EPAAR 1552.237-71) (APR 1984) DEVIATION

(a) The Project Officer is the primary representative of the Contracting Officer authorized to provide technical direction on contract performance.

(b) Individuals other than the Project Officer may be authorized to provide technical direction. If individuals other than the Project Officer are authorized to provide technical direction, their names will be specified in the contract, delivery order, work assignment or technical direction document as appropriate. A Delivery Order Project Officer, Work Assignment Manager or Task Manager is authorized to provide technical direction, subject to the limitations set forth below, only on his/her delivery order, work assignment or technical direction document.

(c) Technical direction includes:

(1) Direction to the contractor which assists the contractor in accomplishing the Statement of Work.

(2) Comments on and approval of reports or other deliverables.

(d) Technical direction must be within the contract and the delivery order, work assignment or technical direction document statement of work. The Project Officer or any other technical representative of the Contracting Officer does not have the authority to issue technical direction which (1) institutes additional work outside the scope of the contract, delivery order, work assignment or technical direction document; (2) constitutes a change as defined in the "Changes" clause; (3) causes an increase or decrease in the estimated cost of the contract, delivery order, work assignment or technical direction document; (4) alters the period of performance; or (5) changes any of the other express terms or conditions of the contract, delivery order, work assignment or technical direction document.

(e) Technical direction will be issued in writing or confirmed in writing within five (5) calendar days after verbal issuance. One copy of the technical direction memorandum will be forwarded to the Contracting Officer and the Project Officer.

H.17 PUBLICITY (EPAAR 1552.237-74) (APR 1984)

(a) The Contractor agrees to notify and obtain the verbal approval of the Project Officer prior to releasing any information to the news media regarding the activities being conducted under this contract.

(b) It is also agreed that the Contractor shall acknowledge EPA support whenever the work funded in whole or in part by this contract is publicized in any news media.

H.18 PAPERWORK REDUCTION ACT (EPAAR 1552.237-75) (APR 1984)

If it is established at award or subsequently becomes a contractual requirement to collect identical information from ten (10) or more public respondents, the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. applies. In that event, the Contractor shall not take any action to solicit information from any of the public respondents until notified in writing by the Contracting Officer that the required Office of Management and Budget (OMB) final clearance was received.

H.19 FABRICATION OR ACQUISITION OF NONEXPENDABLE PROPERTY (EPAAR 1552.245-72) (APR 1984)

The Contractor shall not fabricate nor acquire under this contract, whether directly or indirectly through a subcontract, an item of nonexpendable property without written approval from the Contracting Officer.

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PART II - CONTRACT CLAUSES

SECTION I - CONTRACT CLAUSES

I.1 NOTICE Listing Contract Clauses Incorporated by Reference

NOTICE:

The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.202-1	OCT 1995	DEFINITIONS
52.203-3	APR 1984	GRATUITIES
52.203-5	APR 1984	COVENANT AGAINST CONTINGENT FEES
52.203-6	JUL 1995	RESTRICTIONS ON SUBCONTRACTOR SALES TO THE GOVERNMENT
52.203-7	JUL 1995	ANTI-KICKBACK PROCEDURES
52.209-6	JUL 1995	PROTECTING THE GOVERNMENT'S INTEREST WHEN SUBCONTRACTING WITH CONTRACTORS DEBARRED, SUSPENDED, OR PROPOSED FOR DEBARMENT
52.219-8	JUN 1997	UTILIZATION OF SMALL, SMALL DISADVANTAGED AND WOMEN-OWNED SMALL BUSINESS CONCERNS
52.222-3	AUG 1996	CONVICT LABOR
52.222-26	APR 1984	EQUAL OPPORTUNITY
52.222-36	APR 1984	AFFIRMATIVE ACTION FOR HANDICAPPED WORKERS
52.222-43	MAY 1989	FAIR LABOR STANDARDS ACT AND SERVICE CONTRACT ACT - PRICE ADJUSTMENT (MULTIPLE YEAR AND OPTION CONTRACTS)
52.222-35	APR 1998	AFFIRMATIVE ACTION FOR DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA
52.222-37	APR 1998	EMPLOYMENT REPORTS ON DISABLED VETERANS AND VETERANS OF THE VIETNAM ERA
52.223-2	APR 1984	CLEAN AIR AND WATER
52.223-13	OCT 1996	CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING
52.223-14	OCT 1996	TOXIC CHEMICAL RELEASE REPORTING
52.227-1	JUL 1995	AUTHORIZATION AND CONSENT
52.227-2	AUG 1996	NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT
52.229-3	JAN 1991	FEDERAL, STATE, AND LOCAL TAXES
52.229-5	APR 1984	TAXES--CONTRACTS PERFORMED IN U.S. POSSESSIONS OR PUERTO RICO
52.232-1	APR 1984	PAYMENTS
52.232-8	MAY 1997	DISCOUNTS FOR PROMPT PAYMENT
52.232-11	APR 1984	EXTRAS
52.232-16	JUL 1991	PROGRESS PAYMENTS
52.232-24	JAN 1986	PROHIBITION OF ASSIGNMENT OF CLAIMS
52.232-33	AUG 1996	MANDATORY INFORMATION FOR ELECTRONIC FUNDS TRANSFER PAYMENT

52.232-17	JUN 1996	INTEREST
52.232-25	JUN 1997	PROMPT PAYMENT
52.233-1	OCT 1995	DISPUTES ALTERNATE I (DEC 1991)
52.233-2	AUG 1996	SERVICE OF PROTEST
52.233-3	AUG 1996	PROTEST AFTER AWARD
52.242-13	JUL 1995	BANKRUPTCY
52.243-1	AUG 1987	CHANGES--FIXED-PRICE ALTERNATE I (APR 1984)
52.244-4	APR 1984	SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS
52.245-2	DEC 1989	GOVERNMENT PROPERTY (FIXED-PRICE CONTRACTS)
52.246-25	FEB 1997	LIMITATION OF LIABILITY--SERVICES
52.249-4	APR 1984	TERMINATION FOR CONVENIENCE OF THE GOVERNMENT (SERVICES) (SHORT FORM)
52.249-8	APR 1984	DEFAULT (FIXED-PRICE SUPPLY AND SERVICE)
52.253-1	JAN 1991	COMPUTER GENERATED FORMS

I.2 PRINTING/COPYING DOUBLE-SIDED ON RECYCLED PAPER (FAR 52.204-4) (JUN 1996) DEVIATION

(a) In accordance with Executive Order 12873, dated October 20, 1993, as amended by Executive Order 12995, dated March 25, 1996, the Offeror/Contractor is required to submit paper documents, such as offers, letters, or reports, that are printed/copied double-sided on recycled paper that has at least 20% postconsumer material.

(b) The 20% standard applies to high-speed copier paper, offset paper, forms bond, computer printout paper, carbonless paper, file folders, white woven envelopes, and other uncoated printed and writing paper, such as writing and office paper, book paper, cotton fiber paper, and cover stock. An alternative standard to meeting the 20% postconsumer material standard is 50% recovered material content of certain industrial by-products.

I.3 OPTION TO EXTEND THE TERM OF THE CONTRACT (FAR 52.217-9) (MAR 1989)

(a) The Government may extend the term of this contract by written notice to the Contractor within _____ provided, that the Government shall give the Contractor a preliminary written notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit the Government to an extension.

(b) If the Government exercises this option, the extended contract shall be considered to include this option provision.

(c) The total duration of this contract, including the exercise of any options under this clause, shall not exceed _____.

I.4 SUBCONTRACTS FOR COMMERCIAL ITEMS AND COMMERCIAL COMPONENTS (FAR 52.244-6) (APR 1998)

(a) Definition.

“Commercial item”, as used in this clause, has the meaning contained in the clause at 52.202-1, Definitions.

“Subcontract”, as used in this clause, includes a transfer of commercial items between divisions, subsidiaries, or affiliates of the Contractor or subcontractor at any tier.

(b) To the maximum extent practicable, the Contractor shall incorporate, and require its subcontractors at all tiers to incorporate, commercial items or nondevelopmental items as components of items to be supplied under this contract.

(c) Notwithstanding any other clause of this contract, the Contractor is not required to include any FAR provision or clause, other than those listed below to the extent they are applicable and as may be required to establish the reasonableness of prices under Part 15, in a subcontract at any tier for commercial items or commercial components:

(1) 52.222-26, Equal Opportunity (E.O. 11246);

(2) 52.222-35, Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (38 U.S.C. 4212(a));

(3) 52.222-36, Affirmative Action for Handicapped Workers (29 U.S.C. 793); and

(4) 52.247-64, Preference for Privately Owned U.S.-Flagged Commercial Vessels (46 U.S.C. 1241) (flow down not required for subcontracts awarded beginning May 1, 1996).

(d) The Contractor shall include the terms of this clause, including this paragraph (d), in subcontracts awarded under this contract.

I.5 COMPETITION IN SUBCONTRACTING (FAR 52.244-5) (DEC 1996)

(a) The Contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the contract.

(b) If the Contractor is an approved mentor under the Department of Defense Pilot Mentor-Protege Program (Pub. L. 101-510, section 831 as amended), the Contractor may award subcontracts under this contract on a noncompetitive basis to its proteges.

I.6 AUTHORIZED DEVIATIONS IN CLAUSES (FAR 52.252-6) (APR 1984)

(a) The use in this solicitation or contract of any Federal Acquisition Regulation (48 CFR Chapter 1) clause with an authorized deviation is indicated by the addition of "DEVIATION" after the date of the clause.

(b) The use in this solicitation or contract of any Environmental Protection Agency (48 CFR Chapter 15) clause with an authorized deviation is indicated by the addition of "DEVIATION" after the name of the regulation.

I.7 CLAUSES INCORPORATED BY REFERENCE (FAR 52.252-2) (FEB 1998)

This contract incorporates one or more clauses by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. Also, the full text of a clause may be accessed electronically at this/these address(es):

http://www.arnet.gov/far/

[Insert one or more Internet addresses]

PART III - LIST OF DOCUMENTS, EXHIBITS, AND OTHER ATTACHMENTS

SECTION J - LIST OF ATTACHMENTS

J.1 LIST OF ATTACHMENTS (EP 52.252.100) (APR 1984)

1 STATEMENT OF WORK
(WHICH INCLUDES THE MAIN SOW AND ATTACHMENTS 1-4)

2 GLOSSARY

3 INVOICE INSTRUCTIONS, STANDARD FORM 1034

4 ON-SITE LABORATORY EVALUATION

PART IV - REPRESENTATIONS AND INSTRUCTIONS

SECTION K - REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS

K.1 CERTIFICATE OF INDEPENDENT PRICE DETERMINATION (FAR 52.203-2) (APR 1985)

(a) The offeror certifies that--

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other offeror or competitor relating to (i) those prices, (ii) the intention to submit an offer, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this offer have not been and will not be knowingly disclosed by the offeror, directly or indirectly, to any other offeror or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the offeror to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory--

(1) Is the person in the offeror's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above; or

(2)(i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above

_____
_____
_____

[Insert full name of person(s) in the offeror's organization responsible for determining the prices offered in the bid or proposal, and the title of his or her position in the offeror's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the offeror deletes or modifies subparagraph (a)(2) above, the offeror must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

K.2 TAXPAYER IDENTIFICATION (FAR 52.204-3) (JUN 1997)

(a) Definitions.

"Common parent," as used in the solicitation provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Corporate status," as used in this solicitation provision, means a designation as to whether the offeror is a corporate entity, an unincorporated entity (e.g., sole proprietorship or partnership), or a corporation providing medical and health care services.

"Taxpayer Identification Number (TIN)," as used in this solicitation provision, means the number required by the IRS to be used by the offeror in reporting income tax and other returns.

(b) All offerors are required to submit the information required in paragraphs (c) through (e) of this solicitation provision in order to comply with reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service (IRS). If the resulting contract is subject to the reporting requirements described in FAR 4.903, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) Taxpayer Identification Number (TIN).

[ ] TIN: _____

[ ] TIN: has been applied for.

[ ] TIN: is not required because:

[ ] Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S;

[ ] Offeror is an agency or instrumentality of a foreign government;

[ ] Offeror is an agency or instrumentality of a Federal, state or local government;
[ ] Other. State basis. _____

(d) Corporate Status.

[ ] Corporation providing medical and health care services, or engaged in the billing and collecting of payments for such services;

[ ] Other corporate entity;

[ ] Not a corporate entity:
[ ] Sole proprietorship;
[ ] Partnership;
[ ] Hospital or extended care facility described in 26 CFR 501(c)(3) that is exempt from taxation under 26 CFR 501(a).

(e) Common Parent.

[ ] Offeror is not owned or controlled by a common parent as defined in paragraph (a) of this clause.

[ ] Name and TIN of common parent;

Name _____

TIN _____

K.3 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (FAR 52.209-5) (MAR 1996)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that -

(i) The Offeror and/or any of its Principals -

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a 3-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.

(ii) The Offeror has ( ) has not ( ), within a 3-year period preceding this offer, had one or more contracts terminated for default by any Federal

agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or

supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER SECTION 1001, TITLE 18, UNITED STATES CODE.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

K.4 TYPE OF BUSINESS ORGANIZATION (FAR 52.215-4) (OCT 1997)

The offeror or respondent, by checking the applicable box, represents that--

(a) It operates as **G** an individual, **G** a partnership, **G** a nonprofit organization, **G** a joint venture, or **G** a corporation incorporated under the laws of the State of _____.

(b) If the offeror or respondent is a foreign entity, it operates as **G** an individual, **G** a partnership, **G** a nonprofit organization, **G** a joint venture, or **G** a corporation, registered for business in (country) _____.

K.5 SMALL BUSINESS CONCERN REPRESENTATION FOR THE SMALL BUSINESS

COMPETITIVENESS DEMONSTRATION PROGRAM (FAR 52.219-19) (JAN 1997)

(a) Definition.
" Emerging small business" as used in this solicitation, means a small business concern whose size is no greater than 50 percent of the numerical size standard applicable to the standard industrial classification code assigned to a contracting opportunity.

(b) [Complete only if the Offeror has represented itself under the provision at 52.219-1 as a small business concern under the size standards of this solicitation.]
The Offeror [ ] is, [] is not an emerging small business.

(c) [Complete only if the Offeror is a small business or an emerging small business, indicating its size range.)

Offeror's number of employees for the past 12 months (check this column if size standard stated in solicitation is expressed in terms of number of employees) or Offeror's average annual gross revenue for the last 3 fiscal years (check this column if size standard stated in solicitation is expressed in terms of annual receipts). (Check one of the following.)

No. of Employees	Avg. Annual Gross Revenue
____ 50 or fewer	____ $1 million or less
____ 51 - 100	____ $1,000,001 - $2 million
____ 101 - 250	____ $2,000,001 - $3.5 million
____ 251 - 500	____ $3,500,001 - $5 million
____ 501 - 750	____ $5,000,001 - $10 million
____ 751 - 1,000	____ $10,000,001 - $17 million
____ Over 1,000	____ Over $17 million

K.6 SMALL BUSINESS PROGRAM REPRESENTATIONS (FAR 52.219-1) (APR 1998)

(a)(1) The standard industrial classification (SIC) code for this acquisition is 9511 Air and Water Resource and Solid Waste Management.

(2) The small business size standard is (insert size standard).

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) *Representations*. (1) The offeror represents as part of its offer that it [ ]is, [ ]is not a small business concern.

(2) (Complete only if offeror represented itself as a small business concern in paragraph (b)(1) of this section.) The offeror represents as part of its offer that it [ ]is, [ ]is not a small disadvantaged business concern.

(3) (Complete only if offeror represented itself as a small business concern in paragraph (b)(1) of this section.) The offeror represents as part

of its offer that it [ ]is, [ ]is not a women-owned small business concern.

(c) *Definitions*. Joint Venture, for purposes of a small disadvantaged business(SDB) set-aside or price evaluation preference(as prescribed at 13 CFR 124.321), is a concern that is owned and controlled by one or more socially and economically disadvantaged individuals entering into a joint venture agreement with one or more business concerns and is considered to be affiliated for size purposes with such other concern(s). The combined annual receipts or employees of the concerns entering into the joint venture must

meet the applicable size standard corresponding to the SIC code designated for the contract. The majority of the venture's earnings must accrue directly to the socially and economically disadvantaged individuals in the SDB concern(s) in the joint venture. The percentage of the ownership involvement in a joint venture by disadvantaged individuals must be at least 51 percent.

Small business concern, as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

Small disadvantaged business concern, as used in this provision, means a small business concern that (1) is at least 51 percent unconditionally owned by one or more individuals who are both socially and economically disadvantaged, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more socially and economically disadvantaged individuals, and (2) has its management and daily business controlled by one or more such individuals. This term also means a small business concern that is at least 51 percent unconditionally owned by an economically disadvantaged Indian tribe or Native Hawaiian Organization, or a publicly owned business having at least 51 percent of its stock unconditionally owned by one or more of these entities, which has its management and daily business controlled by members of an economically disadvantaged Indian tribe or Native Hawaiian Organization, and which meets the requirements of 13 CFR Part 124.

Women-owned small business concern, as used in this provision, means a small business concern-

(1) Which is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at east 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice. (1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small or small disadvantaged business concern in order to obtain a

contract to be awarded under the preference programs established pursuant to sections 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall-

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under

the authority of the Act.

K.7 CERTIFICATION OF NONSEGREGATED FACILITIES (FAR 52.222-21) (APR 1984)

(a) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(b) By the submission of this offer, the offeror certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The offeror agrees that a breach of this certification is a violation of the Equal Opportunity clause in the contract.

(c) The offeror further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will--

(1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;

(2) Retain the certifications in the files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

NOTICE TO PROSPECTIVE
SUBCONTRACTORS OF REQUIREMENT
FOR CERTIFICATIONS OF
NONSEGREGATED FACILITIES

A Certification of Nonsegregated Facilities must be submitted before the

award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

K.8 PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FAR 52.222-22) (APR 1984)

The offeror represents that--

(a) It [ ] has, [ ] has not participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this

solicitation, the clause originally contained in Section 310 of Executive Order No. 10925, or the clause contained in Section 201 of Executive Order No. 11114;

(b) It [ ] has, [ ] has not filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

K.9 AFFIRMATIVE ACTION COMPLIANCE (FAR 52.222-25) (APR 1984)

The offeror represents that--

(a) It [ ] has developed and has on file, [ ] has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) It [ ] has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

K.10 ORGANIZATIONAL CONFLICT OF INTEREST CERTIFICATION (EPAAR 1552.209-72) (APR 1984)

The offeror [ ] is [ ] is not aware of any information bearing on the existence of any potential organizational conflict of interest. If the offeror is aware of information bearing on whether a potential conflict may exist, the offeror shall provide a disclosure statement describing this information. (See Section L of the solicitation for further information.)

K.11 SIGNATURE BLOCK (EP 52.299-900) (APR 1984)

I hereby certify that the responses to the above Representations, Certifications and other statements are accurate and complete.

Signature:_____

Title :_____

Date :_____

SECTION L - INSTRUCTIONS, CONDITIONS, AND NOTICES TO OFFERORS

L.1 NOTICE Listing Contract Clauses Incorporated by Reference

NOTICE:

The following solicitation provisions and/or contract clauses pertinent to this section are hereby incorporated by reference:

FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1)

NUMBER	DATE	TITLE
52.204-6	APR 1998	DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER
52.215-1	OCT 1997	INSTRUCTIONS TO OFFERORS-COMPETITIVE ACQUISITION

L.2 TYPE OF CONTRACT (FAR 52.216-1) (APR 1984)

The Government contemplates award of an Indefinite Delivery/Indefinite Quantity (IDIQ) contract with fixed unit prices resulting from this solicitation.

L.3 SIC CODE AND SMALL BUSINESS SIZE STANDARD (FAR 52.219-22) (JAN 1991)

(a) The standard industrial classification (SIC) code for this acquisition is 8734, Laboratory Services (NAIC 54138).

(b)(1) The small business size standard is _____.

(2) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

L.4 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FAR 52.252-1) (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

http://www.arnet.gov/far/

[Insert one or more Internet addresses]

L.5 ORGANIZATIONAL CONFLICT OF INTEREST NOTIFICATION (EPAAR 1552.209-70) (APR 1984)

(a) The prospective Contractor certifies, to the best of its knowledge and belief, that it is not aware of any information bearing on the existence of any potential organizational conflict of interest. If the prospective Contractor cannot so certify, it shall provide a disclosure statement in its proposal which describes all relevant information concerning any past, present, or planned interests bearing on whether it (including its chief executives and directors, or any proposed consultant or subcontractor) may have a potential organizational conflict of interest.

(b) Prospective Contractors should refer to FAR Subpart 9.5 and EPAAR Part 1509 for policies and procedures for avoiding, neutralizing, or mitigating organizational conflicts of interest.

(c) If the Contracting Officer determines that a potential conflict exists, the prospective Contractor shall not receive an award unless the conflict can be avoided or otherwise resolved through the inclusion of a special contract clause or other appropriate means. The term of any special clause are subject to negotiation.

L.6 TECHNICAL QUESTIONS (EP 52.215-110) (APR 1984)

Offerors must submit all technical questions concerning this solicitation in writing to the contract specialist (an electronic mail message satisfies the written requirement). EPA must receive the questions no later than **15** calendar days after the date of this solicitation. EPA will answer questions which may affect offers in an amendment to the solicitation. EPA will not reference the source of the questions.

L.7 RELEASE OF COST OR PRICING PROPOSALS OUTSIDE THE GOVERNMENT FOR AUDIT (EP 52.215-115) (MAR 1989)

Cost or pricing proposals submitted in response to this solicitation may be released outside the Government for audit purposes regardless of whether information contained in such proposals has been claimed or determined to be business confidential. If an outside audit is obtained, the non-Government auditor shall use the information only for audit purposes; shall not disclose any information in the proposals to anyone other than authorized EPA employees without the prior written approval of the Assistant General Counsel responsible for information law matters; and shall return all copies of proposals, as well as any abstracts, to the Government upon completion of the audit. The non-Government auditor shall obtain a written agreement from each of its employees with access to the proposals to honor these limitations prior to allowing the employee access.

L.8 COMPLIANCE WITH FAR CLAUSE 52.222-43, "FAIR LABOR STANDARDS ACT AND SERVICE CONTRACT ACT - PRICE ADJUSTMENT (MULTIPLE YEAR AND OPTION CONTRACTS)" (EP 52.222-100) (FEB 1994)

Offerors are reminded that in accordance with FAR Clause 52.222- 43, "Fair Labor Standards Act and Service Contract Act - Price Adjustment (Multiple Year and Option Contracts)", offerors must warrant that the prices in this contract for labor categories subject to prevailing wage determinations and collective bargaining agreements do not include allowance for any contingency to cover increased costs for which adjustment is provided under this clause.

Offerors shall not include escalation for direct labor and fringe costs for the option years for these covered labor catego
ries in their proposals. In accordance with FAR 52.222-43, during contract performance, the contract price or fixed labor rates will be adjusted to reflect the successful offeror's actual increase or decrease in applicable wages and fringe benefits.

L.9 NOTICE OF FILING REQUIREMENTS FOR AGENCY PROTESTS (EP 52.233-01) (MAR 1997)

Agency protests shall be filed with the Contracting Officer in accordance with the requirements of FAR 33.103(d) and (e). Within 10 calendar days after receipt of a Contracting Officer decision, the protestor may submit a written request for an independent review by the Head of the Contracting Activity. This independent review is available only as an appeal of a Contracting Officer decision on a protest. Accordingly, as provided in 4 CFR 21.1(a)(3), any subsequent protest to the GAO must be filed within 10 days of knowledge of the Contracting Officer’s adverse decision.

L.10 INSTRUCTIONS FOR SUBMISSION OF OFFERS FOR SUBMISSION OF PROPOSAL FOR PHASE I

The Proposal review and evaluation process consists of two phases. The first phase will be EPA’s weighting and ranking of Proposals submitted in response to this RFP and in accordance with the proposal instructions of this Section L. The Phase I Proposal will consist of two volumes. Volume I will be the Technical Proposal, which should not contain any prices or business information. Volume II will be the Business Proposal containing the price and business information. For those proposals in Phase I determined to be in the competitive range, after weighting and ranking the proposals in accordance with the Evaluation Criteria in Section M, these will proceed on to Phase II of the review process. Reference L. below for a description of Phase II.

Each Offeror’s proposal submitted in response to this solicitation shall be in two (2) volumes as described below (Volume I is a Technical Proposal and Volume II is a Business Proposal), which collectively constitute the proposal. **The proposal should be submitted in an original and two copies (reference Clause L. for the address to submit it to)**.

In addition to the Proposal, <u>and the requirements for submittal set forth in FAR 52.215-1 (OCT 1997), “INSTRUCTIONS TO OFFERORS—COMPETITIVE ACQUISITIONS, ALTERNATE 1"</u>, proposals **must** include the following:

Standard Form 33, “Solicitation, Offer, and Award”, with blocks 12

through 18 completed by the Offeror (Note: this is Section A of the RFP, i.e., the first two pages of the RFP, after the cover letter).

RFP Section B, Clause B.7, Schedule of Items & Prices: these pricing sheets must be filled out for all of the periods: Base, Option #1, and Option #2, and prepared in accordance with the “Instructions for Preparation of Price Proposals”, in this Section L.

RFP Section K, “Representations and Certifications and Other Statements of the Offerors”, signed and dated by a person who has the authority to make these representations and certifications for your firm.

The Technical Proposal per instructions in this Section L.

The Business Proposal per instructions in this Section L.

NOTE: Failure to complete and submit any of the above documents may result in the Offeror being eliminated from further consideration under this solicitation.

Reference description of Phase II for those proposals determined to be in the competitive range, which includes analysis of performance evaluation (PE) samples.

Proposals will be evaluated utilizing the Evaluation Criteria in Section M of this RFP.

L.11 INSTRUCTIONS FOR PREPARATION OF WRITTEN TECHNICAL PROPOSALS (PHASE ONE)

Introduction. The main purpose of the technical proposal is for the Offeror to (1) describe how the Offeror would implement the Statement of Work (SOW) in Section J, Attachment 1; and, (2) demonstrate the Offeror’s capability, experience, qualifications, expertise, etc, to perform the work.

B. SPECIAL INSTRUCTIONS FOR PREPARATION OF THE TECHNICAL PROPOSAL (PHASE I)

(1) Special technical proposal instructions: **You are advised to closely read the technical proposal instructions and technical evaluation criteria before preparing a technical proposal.** The technical proposal will consist of two (2) phases. Phase One will consist of: evaluation of the offeror’s capability (corporate experience, facility & equipment, and personnel) based on the written technical proposal and evaluation of the offeror’s past performance. The Past Performance Questionnaires (Attachment D) will be used to contact references and to evaluate the offerors’ past performance.

Based on the weighting and ranking of the proposals in Phase I, utilizing the Evaluation Criteria and Score Sheet shown in Section M of this RFP, there will be a determination of which proposals qualify for placement into the competitive range. These proposals will then move on to Phase II. Phase Two will consist of analysis of Performance Evaluation (PE) samples by the Offerors in Phase II, and EPA’s evaluation of the PE data

package.

(2) **<u>Written Technical Proposal: Format, Organization and Content</u> - Offerors are advised to provide all the information in the order and format**

specified below. The offeror's written technical proposal must provide a sufficient basis for a thorough evaluation of the proposal offeror's capability and past performance in accordance with the evaluation criteria set forth in Section M.

Written technical proposals shall consist of five (5) sections (which are described below):

1. Technical Narrative
2. Corporate Experience
3. Facility and Equipment
4. Qualifications of Personnel
5. Past Performance

1. **Technical Narrative**

Explain how you, the Offeror, will implement the Statement of Work (SOW), in Section J, Attachment 1. The Offeror should not re-state the SOW but explain how EPA's requirements, as set forth in the SOW, will be addressed. The technical narrative should be written in a way that reflects the technical capability and expertise of the Offeror.

Offerors should explain the technical expertise they have, and explain how the Offeror will obtain a particular expertise if the Offeror does not specialize in analysis of a particular analyte or compound.

EPA encourages innovative suggestions or approaches to accomplishing the Statement of Work, and these should be described fully in the technical proposal.

Laboratory Quality Assurance Plan

As part of the Technical Proposal, in the Technical Narrative portion, the Offeror must submit a Laboratory Quality Assurance Plan (LQAP). The LQAP should describe policies, approach to quality assurance and control, including management controls, description of internal QA procedures and how these are implemented, etc. REFERENCE THE STATEMENT OF WORK, ATTACHMENT 3, SECTION 3 FOR THE KEY LABORATORY QUALITY ASSURANCE PLAN (LQAP)MINIMUM REQUIREMENTS FOR LQAP ELEMENTS OF IMPORTANCE TO EPA. The LQAP is a key element to be weighted and ranked in Phase I (reference the scoring information in Section M, Evaluation Criteria).

2. **<u>Corporate Experience</u>**

Offerors shall provide a description of their corporate experience in providing services that are the same or similar as those in the analytical requirements, data reporting requirements, methods for sample preparation and analysis, number of samples, sample matrices, QA/QC requirements, data deliverables detailed in the Statement of Work in Section J, Attachment 1.

a. **Offerors shall submit a list of all contracts and subcontracts currently in process, or completed within the past three (3) years, which are similar in nature (i.e. scope, magnitude and complexity) and directly related to the requirements in the Statement of Work, Section J, Attachment 1.** Contracts listed may include those entered into with Federal, State and local governments, and commercial businesses. Specifically, the offeror shall provide the following information for each contract/subcontract:

i. name of government contracting organization/commercial business (i.e., the Client)
ii. contract title and number;
iii. contract type and total contract/subcontract value;
iv. brief description of the technical activities conducted under contract/subcontract and the technology areas involved (provide method references, matrices, etc.);
v. period of performance;
vi. dollar value;
vii. contact Point, Address and Phone Number (e.g. Contracting Officer, and Program Manager for the reference)
viii. disclosure and description of any affiliation between offeror and client

This list should demonstrate the offeror’s experience in managing contracts that are similar to the scope (same routine analytical methods and non-routine analyses).

3. **<u>Facility and Equipment</u>**

Offerors shall describe their facility and their ability to provide and maintain the equipment required to perform the requirements of the Statement of Work. Offerors shall provide the following:

a. a floor plan of the facility which delineates the laboratory space where the analytical services will be performed under this contract. The floor plan shall identify the following:

ii Sample Receipt Area
(ii) Sample Storage Area
(iii) Sample Preparation Area
(iv) Sample Analysis Area
(v) Data Package Assembly Area
(vi) Location of required equipment specified in Attachment G-2

b. a brief detailed description of these areas and how the layout contributes to efficient and effective laboratory operations whereby contract requirements (i.e., QA/QC, chain-of-custody) will be met.

c. an inventory of their available equipment(SEE SAMPLE FORMAT IN AN ATTACHMENT TO THIS SECTION, ATTACHMENT L-1, EQUIPMENT SUMMARY). The inventory must include the manufacturer, model, serial number, software revision and month and year of installation of the instrumentation.

d. a description of the maintenance program for all equipment,

including data systems.

4. **Qualifications of Personnel**

(a) Functional Expertise and Qualifications:

Offerors need to describe the functional expertise the Offeror is proposing to perform the work described in this RFP, and the qualifications of the personnel being proposed, and state whether these qualifications meet the minimum qualification requirements of this RFP. Offerors need to demonstrate that the proposed personnel possess the minimum qualifications necessary to successfully manage and perform the Statement of Work (SOW**).** The Offeror should utilize its own labor classifications as long as the functions required by the Statement of Work, are provided for. Some of the functions that are required by the Statement of Work include: project management, Laboratory Management, Quality Assurance Officer, GC/MS Laboratory management/supervision, GC/MS Interpretation, Pesticide/PCB Analysis, and Sample Preparation Laboratory Supervision, etc.

If the labor category titles used in the RFP do not exactly match the titles normally used in the offeror’s company, the offeror shall provide the following information:

i. A statement of the offeror’s normally used nomenclature for each labor category included in the RFP, together with a copy of the offeror’s own description of duties for each labor category.

ii. Verification that any such category meets or exceeds the requirements of the RFP.

(b) Resumes:

Resumes shall be submitted for all key personnel being proposed. Each resume shall include the following information:

i. Education: The type of degree (e.g., B.S. in Chemistry, High School diploma), the institution granting the degree, and the year of the degree or diploma.

ii. Experience: The dates of employment, by month and year (i.e. From 10/90 to present), the employer and location, the job title, specific responsibilities (the number of months and years performing each responsibility must be included), task and/or analyses performed, and the instrumentation used. The resume should highlight information pertinent to the requirements of the contract.

5. **Past Performance**

a. The list of corporate experience required above will be used as references for the offeror's past performance on contracts and subcontracts currently in process, and/or completed within the past three (3) years, which are similar in nature (i.e. scope, magnitude, and complexity) to this requirement.

b. If no response is received from a reference, the Government will

make an attempt to contact another reference identified by the offeror, to contact a reference not identified by the offeror, or to complete the evaluation with those references who responded.

If none of the references respond, an offeror will receive a neutral score. Attempts to obtain responses will generally not go beyond two telephonic messages and/or written requests from the Government, unless otherwise stated in the solicitation.

c. If negative feed back is received from an offeror's reference, the Government will compare the negative response to the offeror's other references to note differences. A score will be assigned appropriately to the offeror based on the information. Negative and/or positive responses will only be revealed to an offeror when holding discussions.

d. If an offeror has no relevant past performance history, an offeror must affirmatively state that it possesses no relevant directly related or similar past performance. If an offeror does not indicate whether past performance history exists, the offeror's proposal may be considered ineligible for award.

e. Each offeror may describe any quality awards or certifications that indicate the offeror possesses a high-quality process for developing and producing the product or service required.

f. Each offeror will be evaluated on performance under existing and prior contracts/subcontracts for products or services similar in scope, magnitude, and complexity to this requirement. Past Performance information will be used for both responsibility determinations and as an evaluation factor for award against which offerors' relative rankings will be compared to ensure the best value to the Government. The Government will focus on information that demonstrates quality of performance relative to the size and complexity of the procurement under consideration. The Past Performance Questionnaire (Reference Attachment L...D) is a sample of what the Government may use to collect this information. References other than those identified by the offeror may be contacted by the Government and used in the evaluation of the offeror's past performance.

g. The Contracting Officer will retain the information collected on past performance in the official contract file.

B. GENERAL INSTRUCTIONS FOR PREPARATION OF THE TECHNICAL PROPOSAL (PHASE I)

The written technical proposals shall be prepared using the following guidance:

1. **Length** - The maximum length of the written technical proposals shall be limited to 50 typewritten pages (25 double sided pages; anything in excess of 50 typewritten pages will not be considered) on 8 ½ x 11" paper, using no less than 10 point character size and no less than an *average* of 3/4" all around for margins. Written technical proposals must be submitted in an original and three (3) copies. The following items are *excluded* from the above stated page limitation: letters of transmittal, cover page, table-of-contents, and dividers. Resumes and Past Performance Questionnaires are not excluded from the above stated 50 page limitation. Foldout pages are

considered as the total number of 8-1/2 by 11 inch pages or fractions thereof that they fit. Offerors are strongly urged to be as succinct, clear and concise as possible in writing the proposal and adhering to the page limitation.

2. **Format** - Submit your technical proposal as a separate part of the total proposal package. Omit all cost or pricing details from the Technical proposal.

3. **Exceptions** - Any exceptions or conditional assumptions taken with respect to the requirements of this RFP shall be fully explained in the proposal. If the EPA Contracting Officer determines that the exceptions or conditonal assumptions result in a qualification of the Offeror's proposal, then please that exceptions or deviations may render your proposal ineligible for an award without discussions.

L.12 INSTRUCTIONS FOR PREPARATION OF PRICE PROPOSAL (PHASE I)

(a) Offerors shall list fixed unit rates in Section B, Clause B.7, Schedule of Items and Prices. The fixed rates shall include all costs, including labor, indirect expenses, equipment and facility costs, other direct costs, and profit.

(b) The requirements of the Service Contract Act shall be taken into consideration. The offeror shall identify which employees are subject to this Act and the offeror's corresponding labor category, if different. When determining the composite base wage rate for the option period, the offeror shall refer to FAR Clause 52.222-43, FAIR LABOR STANDARS ACT AND SERVICE CONTRACT ACT--PRICE ADJUSTMENT (MULTIPLE YEAR & OPTION CONTRACTS) to ensure that the burdened hourly rates proposed for SCA covered labor categories do not include allowance for any contingency to cover increased cost for which adjustment is provided under this clause.

(c) EPA reserves the right to do a financial capability verification of the Offeror, which may include verification of bank balances, request financial statements or balance sheets, statement of income, cash flow, etc, for the last two completed fiscal years.
****

NOTE: THE FOLLOWING INFORMATION IS PROVIDED ON PHASE II OF THE EVALUATION. PHASE II IS APPLICABLE TO THOSE PROPOSALS RANKED AND WEIGHTED IN PHASE I ABOVE, AND DETERMINED TO BE WITHIN THE COMPETITIVE RANGE. FOR THOSE IN THE

COMPETITIVE RANGE, THE FOLLOWING APPLIES:

L.12 DEMONSTRATION OF TECHNICAL ABILITY (PHASE TWO)

Phase Two will only be conducted with those firms determined to be in the competitive range. Phase Two will consist of analysis of pre-award Performance Evaluation (PE) samples and an evaluation of the PE sample data package deliverable.

A. PERFORMANCE EVALUATION SAMPLES AND DATA PACKAGE

Offerors shall be required to satisfactorily analyze pre-award Performance Evaluation Samples and provide an acceptable data package in order for the government to determine the offeror's technical ability to perform sample

analyses under the terms and conditions of this contract.

In order to determine the technical ability to adequately perform the tasks outlined in this contract, all offerors will be required to satisfactorily meet the acceptable performance limits, identified below, for **both** of the following Performance Evaluation Sample Criteria: (1) Performance Evaluation Sample (PES) Analysis, and (2) Performance Evaluation Sample (PES) Data Package.

Acceptable performance for both of the above criteria is required for offeror laboratories to be considered capable of meeting the operational and quality standards required by this contract. REFERENCE ATTACHMENTS TO THIS SECTION L, ATTACHMENTS L-2, "PRE-AWARD PERFORMANCE EVALUATION SAMPLE", AND FOR THE PERFORMANCE EVALUATION SAMPLE (PES) DATA PACKAGE, SEE ATTACHMENT L-4 TO THE STATEMENT OF WORK for what EPA will be looking for. Reference the Evaluation Criteria for Phase II in Section M of this RFP.

Only offerors with acceptable performance on the PES Analysis will be evaluated on the Data Package submission. The Contracting Officer or his/her designee will provide Performance Evaluation Sample Instructions at the time of the Performance Evaluation Sample distribution defining the following requirements:

- Turnaround time for PES results and documentation
- PES preparation procedures
- Performance Evaluation Sample analysis and reporting requirements, if different from this SOW
- Address(es) for submission of data and offeror supplied documentation

Offerors shall submit their PES data packages on or before the date stipulated in the PES Instructions. A PES data package that is not received by the Government by this deadline will be handled in accordance with FAR Clause 52.215-1, INSTRUCTIONS TO OFFERORS-COMPETITIVE ACQUISITION (OCT 1997). To guarantee that your data will be evaluated and scored within the time frame to insure eligibility for award, the PES data package must be received no later than the date or number of days specified in the PES Instructions.

PES Analysis - PES evaluation, the offeror will be given Performance Evaluation Samples to be analyzed in strict accordance with the technical methodology defined in the SOW. The PES must be analyzed by the offeror's laboratory, the offerors analytical equipment, and the offeror's personnel (i.e., subcontracting of the Performance Evaluation Samples will not be allowed and will result in the disqualification of the offeror from the solicitation). The PES are comprised of ampulated spiking concentrates for subsequent dilution into full volume aqueous PES. Specific PES Instructions will be provided at the time of PES distribution. The offerors are advised to inspect the PES shipment upon arrival (at the verified time of sample receipt, or VTSR) and report any discrepancies or broken ampules for replacement within 48 hours of VTSR to the Contracting Officer. Requests for additional materials made after the two day deadline may not be honored. All other solicitation inquiries must be directed to the Contracting Officer. The offerors PES results will be evaluated against the elements and weights

identified in Attachment G-4, Performance Evaluation Sample (PES) Analysis Score Sheet, to determine that acceptable performance has been met.

PES Data Package - The offeror will be required to provide a complete PES Data Package for evaluation that is fully compliant and complete with all the analytical and reporting requirements defined in the SOW. The offerors PES Data Package will be evaluated against the elements and weights identified in Attachment L-4, "Performance Evaluation Sample (PES) Data Package".

L.14 BASIS OF AWARD

The Government reserves the right to award one to two contracts resulting from this solicitation. If one contract is awarded, the guaranteed minimum (reference Clause B.5 in Section B of this RFP), will be $100,000. If two contracts are awarded, the guaranteed minimum for each contract will be $50,000.

Award will be based on technical merit with price as a factor, based on the Evaluation Criteria in Section M (reference the elements to be scored in Section M), and on the proposal(s) that represent the best value to the Government. Selection of an awardee will be based on technical merit, with price as a factor. Where there are two equally ranked technical proposals, price will be the determining factor. If the Offeror's price proposal is considered unreasonable by the Contracting Officer, the entire proposal may be determined to be unacceptable. The Government reserves the right to award all, or a part of, the proposed line items (reference Clause B.7, Schedule of Items and Prices).

As part of the Government's responsibility determination prior to award, EPA may do a facility inspection of the apparent successful offeror, which would include a preaward laboratory site evaluation. The purpose of the facility inspection is to verify that the potential Contractor has the capability and responsibility to perform the Statement of Work in Attachment J, Section 1. The Government reserves the right to determine the potential Contractor as non-responsive based on an inspection of the Offeror's proposed facility(s); however, the Government will discuss the the issues with the prospective Contractor, prior to the EPA Contracting Officer making a non-responsibility determination.

L.15 RELEASE OF COST OR PRICING PROPOSALS OUTSIDE THE GOVERNMENT FOR AUDIT (EP 52.215-115) (MAR 1989)

Cost or pricing proposals submitted in response to this solicitation may be released outside the Government for audit purposes regardless of whether information contained in such proposals has been claimed or determined to be business confidential. If an outside audit is obtained, the non-Government auditor shall use the information only for audit purposes; shall not disclose any information in the proposals to anyone other than authorized EPA employees without the prior written approval of the Assistant General Counsel responsible for information law matters; and shall return all copies of proposals, as well as any abstracts, to the Government upon completion of the audit. The non-Government auditor shall obtain a written agreement from each of its employees with access to the proposals to honor these limitations prior to allowing the employee access.

L.16 IDENTIFICATION OF SET-ASIDE/8A PROGRAM APPLICABILITY (EP 52.219-100) (FEB 1991)

This procurement is being processed as follows:

(a) Type of set-aside: Small Business

Percent of the set-aside: 100%

(b) 8(a) Program: Not Applicable

L.17 NOTICE TO OFFERORS CONCERNING FALSE REPRESENTATION OF EPA ENDORSEMENT

Neither the award of a contract nor the successful analysis of blind performance evaluation samples (PE-samples) and/or Method Detection Limit Study (MDLs) during contract performance constitutes a certification, accreditation, or endorsement of the contractor’s laboratory by the U.S. Environmental Protection Agency. Allegations of unfair or deceptive advertisements which claim Agency endorsement will be referred to the Federal Trade Commission for action pursuant to Section 6(f) of the Federal Trade Commission Act, 15 USC 46. The Federal Trade Commission has statutory authority to investigate alleged violations of federal law prohibiting unfair methods of competition and to settle such matters through the issuance of consent orders to cease and desist. FTC regulations concerning such matters may be found at 16 CFR, Part 2.

L.18 NOTICE OF FILING REQUIREMENTS FOR AGENCY PROTESTS (EP 52.233-01) (MAR 1997)

Agency protests shall be filed with the Contracting Officer in accordance with the requirements of FAR 33.103(d) and (e). Within 10 calendar days after receipt of an adverse Contracting Officer decision, the protestor may submit a written request for an independent review by the Head of the Contracting Activity. This independent review is available only as an appeal of a

Contracting Officer decision on a protest. Accordingly, as provided in 4 CFR 21.2(a)(3), any subsequent protest to the GAO must be filed within 10 days of knowledge of the Contracting Officer's adverse decision.

L.19 ADDITIONAL BID/PROPOSAL SUBMISSION INSTRUCTIONS (EP-S 99-2) (MAR 1999)

a. General Instructions

These instructions are in addition to the applicable requirements and clauses set forth in the Federal Acquisition Regulation regarding bid/proposal submission and late bid/proposals. Please note that there are distinct addresses designated for bid/proposal submission on the SF 33. Block 7 designates the location specified for delivery of hand carried/courier/overnight delivery service bids/proposals while Block 8 indicates the address specified for receipt of bid/proposals sent by U.S. Mail. Bidders/Offerors are responsible for ensuring that their bids/proposals (and any amendments, modifications, withdrawals, or revisions thereto) are submitted so as to reach the Government office designated on the SF 33 prior to the designated date and time established for receipt. Bidders and offerors are also responsible for allowing sufficient time for the bid/proposal to be processed through EPA's internal mail distribution system described below so

as to reach the designated location for bid/proposal receipt on time. Failure to timely deliver a bid/proposal to the EPA Bid & Proposal Room on the 14th floor of the 75 Hawthorne St. Building, which is the location designated for bid/proposal receipt in blocks 7 and 8 of the SF 33, will render the bid/proposal "late" in accordance with FAR 14.304 and/or 15.208 and disposition of the bid/proposal will be handled in accordance with FAR 14.304 and 52.214-7 for bids and FAR 15.208 and 52.215-1 for proposals. Bidders/Offerors are cautioned that receipt of a bid/proposal by the Agency's mail room or other central receiving facility **does not** constitute receipt by the office designated in the solicitation/invitation for bids.

b. U.S. Mail Delivery-SF 33 Block 8

Block 8 on the SF 33 indicates that bids/proposals sent by U.S. Mail must be timely received by the Bid & Proposal Room, Mail Code PMD-8. Because EPA adheres to a centralized mail delivery system, any bid/proposal submitted via U.S. Mail to the address specified in block 8 of the SF 33 is initially routed to EPA's mail handling facility located at 75 Hawthorne Street, and then subsequently routed to EPA's Bid & Proposal Room (Mail Code PMD-8) located on the 14th floor of at 75 Hawthorne Building. Bidders/Offerors electing to utilize the U.S. Mail for bid/proposal delivery should therefore allow sufficient time prior to the designated time and date for bid/proposal receipt as specified in Block 9 of the SF 33 to allow for the internal routing of their bid/proposal to the EPA Bid & Proposal Room.

<u>All bids/proposals submitted other than by U.S. Mail should utilize the Hand Carried/Courier/Overnight Delivery Service address specified in Block 7 of the SF 33.</u>

c. Hand Carried/Courier Delivery- SF 33 Block 7

EPA's Bid & Proposal Room that is designated for receipt of hand delivered bids/proposals is located on the 14th floor of the U.S. EPA, 75 Hawthorne St., San Francisco, CA 94105. Offerors/contractors and/or their couriers/delivery

personnel must check in at the EPA visitor guard desk, located int he 14th floor reception area.

d. Overnight Delivery Services- SF 33 Block 7

Bid/Proposal deliveries via overnight delivery services (e.g., Federal Express, Airborne Express) must utilize the address specified in block 7 of the SF 33. are delivered directly to the Bid & Proposal Room. Because bids and proposals must be physically received at the Bid & Proposal Room to be considered officially received, bidders/offerors should not rely upon guaranteed delivery times from overnight delivery services as guarantees that their bids/proposals will be officially received on time. Bidders/offerors remain responsible for the timely delivery of their bids/proposals to the Bid & Proposal Room.

e. Bid/Proposal Submission

For MAIL OR HANDCARRY DELIVERY OF PROPOSALS:

U.S. Environmental Protection Agency
Attn: Doug White (14th Floor)
75 Hawthorne St.
San Francisco, CA 94105
Attn: RFP #PR-R9-00-10041 (PMD-8: Jeri Simmons)

SECTION L - ATTACHMENTS

L-1 EQUIPMENT SUMMARY

L-2 PERFORMANCE EVALUATION SAMPLE

L-3 EVENT SEQUENCE FOR PRE-AWARD SITE EVALUATION

L-4 PRE-AWARD ON-SITE LABORATORY EVALUATION AND CHECKLIST

ATTACHMENT L-1
CONTRACT DESIGNATED EQUIPMENT SUMMARY

Laboratory _____Date _____

Offeror shall provide an inventory of available laboratory equipment using the following format.

Item Description	Manufacturer	Model* "S" or "P"	Software Title & Revision #	Serial No. &/or Lab ID	Date Installed Month/Year
GC/MS					
GC/FID					
GC/NPD					
GPC					
GC/ECD					

closed system purge & trap					
purge & trap					
Data System					
Data Back-up System					

* Designate whether a service agreement is in place or personnel on staff will perform instrument repairs. Indicate with either an “S” or “P” with the instrument model.

B.MINIMUM REQUIRED BACK-UP LABORATORY EQUIPMENT INVENTORY

The items of back-up laboratory equipment listed below are the minimum required for contract compliance.

Back-up Items Description	Manufacturer	Model* “S” or “P”	Software Title & Revision #	Serial No. &/or Lab ID	Date Installed Month/Year
GC/MS					
purge & trap					
GC					
ECD					
ECD					
FID					
NPD					

* Designate whether a service agreement is in place or personnel on staff will perform instrument repairs. Indicate with either an “S” or “P” with the instrument model

CONTRACT DESIGNATED EQUIPMENT SUMMARY (continued)

Laboratory _____ **Date** _____

(e)Describe the laboratory's plan to perform volatile in soil analysis when the prime closed system purge & trap is not in service: _____

_____

_____

_____

_____

_____

D.OTHER ORGANIC LABORATORY EQUIPMENT

Item Description	Manufacturer	Model* "S" or "P"	Date Installed Month/Year

*** Designate whether a service agreement is in place or personnel on staff will perform instrument repairs. Indicate with either an "S" or "P" with the instrument model.**

ATTACHMENT L-2
Performance Evaluation Sample (PES)

Section I -Pre-Award Performance Evaluation Sample (PA-PES)

The Prediction Interval (PI) for each analyte will be statistically calculated using the Biweight Method using only the bidders analytical data. The PI will be set using the 90% confidence window with the following two conditions:

-If a TCL or non-TCL compound added to the sample is not identified by 40% or more of the bidders, then that compound is not used in the PA-PES scoring.

-If TCL compound not added to the sample (a TCL contaminant) is identified by 40% or more bidders, then that compound is not to be used in the PA-PES scoring.

The government reserves the right to change the statistical calculation method of any PI or to not utilized a PI (i.e., drop an analyte from scoring) due to unexpect complications with the PA-PES data set. The bidder's analytical PA-PES results will be evaluated and scored using the following scoring algorithm:

$$\text{PA-PES Score} = 100 - ((125*\{2A+B+C\}/T) + (2.2*D)$$

where:

A =Number of TCL compounds added to the sample which the bidder did not identify.
B =Number of TCL compounds added to the sample which the bidder identified outside the action limits.
C =Number of TCL contaminants (compounds not added to the sample) which the bidder quantitated above the CRQL.
D =Number of non-TCL compounds added to the sample which the bidder did not identify.
T =Total number of TCL compounds added to the sample which were used for scoring (excludes TCLS with NU as Limits).

ATTACHMENT L-3
EVENT SEQUENCE FOR PREAWARD SITE EVALUATION

A.Entrance Briefing

-- Purpose of site visit
-- Current contract award status
-- Tentative agenda

B.Facility Tour and Verification of Procedures

-- Sample Receipt, Storage, Log-in, and Tracking
-- Sample Preparation
-- Sample Analysis
-- Data Management
-- QA Program

C.EPA Caucus

D.Exit Briefing

-- Discuss preliminary findings identified during site evaluation and document reviews
-- Discuss corrective action requirements

ATTACHMENT L-4
Pre-Award On-Site Laboratory Evaluation and Checklist

Laboratory:_____

Address:_____

City:_____ **State:**_____ **Zip Code:**_____

Telephone: ( )_____-_____

Date of Evaluation:____/_____/_____**Solicitation No.**_____

Title: Chemical Analysis of Multi-media; Multi-concentration samples for organic using GM/MS and GC Techniques

PERSONNEL CONTACTED

Name:	**Title:**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

LABORATORY EVALUATION TEAM

Name:	**Title:**
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Laboratory Evaluation Checklist

Laboratory Name:	Yes	No
I. SAMPLE RECEIPT AND STORAGE AREA **ITEM** **I.1 Sample Receiving and Storage Facilities**		
1. Are the sample shipping containers opened in a fume hood or vented area to prevent possible laboratory contamination?		
2. Are adequate facilities provided for the cold storage of samples and unused samples for 60 days after data submission?		
3. Are samples and extracts signed in and out of a locked refrigerator by the custodian or other designated individual?		
4. Are cooler temperatures measured and recorded in a laboratory notebook?		
5. Does the sample custodian sign the original chain-of-custody (COC)?		
Comments:		
I.2 Cold Storage for Samples (maintained at 4 C ± 2 C)		
1. Is the temperature of the cold storage recorded daily in a logbook?		
2. Are temperature excursions noted and appropriate actions taken when required?		
3. Are corrective action SOP's posted on the cold storage units?		
4. Are volatile samples stored separately from semivotile, pesticide, PCB and herbicide samples?		
5. Are VOA storage blanks present in the volatile sample storage facility? (One per SDG)		
Comments:		
I.3 SOPs and Record keeping		
1. Is the sample receipt portion of the SOP available to the sample custodian at the sample receipt/storage area?		
2. Are the sample receipt/storage and temperature logbooks completed in a manner consistent with the laboratory's SOP?		
3. Does the sample custodian note the condition of the custody seal in a laboratory notebook?		
Laboratory Name:	Yes	No

4. Does the custodian note the time and physical condition of the sample in a laboratory notebook?		
5. Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?		
Comments:		
II. SAMPLE PREPARATION AREA **When touring the facilities, give special attention to: (a) the overall organization and neatness, (b) the proper maintenance of facilities and instrumentation, © the general adequacy of the facilities to accomplish the required work.** **ITEM** **II.1 General Facilities**		
1. Is the laboratory maintained in a clean and organized manner?		
2. Does the laboratory appear to have adequate work space (6 linear feet of unencumbered bench top per analyst)?		
3. Are laboratory benches made of suitable chemically- resistant materials?		
4. Is there adequate lighting?		
5. Is there adequate ventilation?		
Comments:		
II.2 Laboratory Safety		
1. Is the laboratory safety plan available?		
2. Do chemists, technicians and analysts wear safety glasses and other safety-related equipment?		
3. Are eye wash stations available?		
4. Are chemical spill pillows and spill kits readily available?		
5. Are adequate fire extinguishers, fire blankets and sprinklers available?		
6. Are there signs showing emergency equipment and emergency exits?		
Comments:		
Laboratory Name:	**Yes**	**No**
II.3 Contamination Control		
1. Are contamination-free areas provided for trace level analytical work?		

2. Are contamination-free work areas provided for the handling of toxic materials? (Glove box or isolated hood)		
3. Are there an adequate number of exhaust hoods provided to allow contamination-free work with volatile materials?		
4. Is documented organic-free water available for the preparation of standards and blanks?		
5. Are solvent storage cabinets vented or located in such a way as to prevent possible laboratory contamination?		
6. Is the glassware cleaning operation present and meet GLP standards?		
7. Is glassware stored clean uncontaminated areas?		
Comments:		
II.4 Reagent Control	**Yes**	**No**
1. Are analytical reagents dated upon receipt and used on a first-, first- out basis? (GLP)		
2. Is the purity and reactivity of the analytical reagents verified before use? (Confirm by reagent blank data)		
Comments:		
II.5 Balances		
1. Is the analytical balance located away from drafts and areas subject to rapid temperature changes?		
2. Have all balances been calibrated and checked within one year by a certified technician?		
3. Are all balances checked daily or before each weighing session with the appropriate range of weights and the results recorded a permanent notebook?		
4. Are the routine weights calibrated against class S weights at least once per month and the results recorded a permanent notebook?		
Comments:		
Laboratory Name:	**Yes**	**No**
II.6 Sample Extract Storage		
1. Is the temperature of the extract cold storage properly monitored and recorded?		
2. Are sample extracts stored separately from standards and samples?		

3. Does there appear to be sufficient storage space to keep extracts for the period of time specified the SOW? (365 days)		
4. Is a logbook available listing extracts and their location?		
Comments:		
II.7 Extraction Apparatus		
1. Are appropriate sonicator tips or horns available and free of erosion? (3/4 inch and 1/8 inch)		
2. Does the laboratory have sufficient continuous liquid/liquid extractors to meet the expected workload?		
Comments:		
II.8 Gel Permeation Chromatograph (GPC)		
1. Does the laboratory keep GPC injection and maintenance logbooks?		
2. Do the logbooks indicate that appropriate corrective actions were taken when the calibration does not meet contract requirements?		
Comments:		
II.9 SOPs and Recordkeeping		
1. Is the appropriate portion of the SOP available to the analyst at the sample preparation area?		
2. Is the SOP for glassware cleaning posted at the cleaning station?		
3. Do the analysts record bench data a neat and accurate manner?		
4. Do the analysts record lot numbers of solvents, spiking solutions, and florisil on the bench sheets?		
5. Are the sample preparation and temperature logbooks completed a manner consistent with the laboratory's SOP?		
6. Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?		
Laboratory Name:	Yes	No
Comments:		
III. STANDARDS PREPARATION AND STORAGE ITEM III.1 Standards Storage		

1. Are all organic standards stored so they are protected from exposure to light?		
2. Are Standards stored at the correct temperature?		
a. Volatile at -10 to -20 C		
b. Semivotile at 2 to 6 C		
c. Pesticide/PCB at 2 to 6 C		
d. Herbicide at 2 to 6 C		
3. Is the temperature of the standards cold storage properly monitored and recorded?		
4. Are volatile standards stored separately from semivotile, Pesticide, PCB and herbicide standards?		
5. Are volatile standards stored separately from volatile samples?		
Comments:		
III.2 Standards Preparation		
1. Are reagent grade or higher purity chemicals used to prepare standards?		
2. Are reference materials properly labeled with concentrations, date of preparation, and the identity of the person preparing the standard and/or is a traceable reference code number used?		
3. Are fresh analytical stock standard solutions prepared at a frequency consistent with IFB requirements for:		
a. Volatile--gases/reactive compounds - 2 months; others/non-reactive - 6 months		
b. Semivolatiles - 12 months		
c. Pesticides - 6 months		
d. Herbicides - 12 months		
Laboratory Name:	Yes	No
Comments:		
III.3 Standards Recordkeeping		
1. Are spiking/calibration standards preparation and tracking logbooks maintained for:		
a. Volatile		
b. Semivolatile		
c. Pesticide		

d. Herbicide		
2. Are lot numbers and sources of stock solutions and reagents recorded?		
3. Are there SOPs on standard preparation available to the chemist the preparation area?		
4. Is there evidence of a secondary review of all standards preparation logbooks by someone other than the person generating the records?		
Comments:		
III.4 Standards Certification		
1. Does the laboratory purchase commercially-prepared standard mixes?		
2. Is appropriate documentation (manufacturer's "Certificate of Analysis") available for each lot of purchased standards use?		
a. Volatile		
b. Semivolatiles		
c. Pesticides		
d. Herbicides		
Comments:		
IV. SAMPLE ANALYSIS INSTRUMENTATION-GC/MS AREA ITEM IV.1 GC/MS Operation and Maintenance		
1. Are manufacturer's operating manuals readily available to the operator?		
2. Does the laboratory purchase a service contract for instruments?		
Laboratory Name:	Yes	No
3. Are extensive -house replacement parts available for routine and non-routine maintenance (GC/MS and GC spares, filaments, GC columns, traps, etc.)?		
4. Does the laboratory perform regular preventive maintenance on the instruments used?		
5. Is a permanent service record for each instrument maintained a logbook?		
6. Are the instruments properly vented or are appropriate traps place?		
7. Does the laboratory use the May 1992 release or later of the NIST/EPA/NIH or WILEY (1991 release or later) mass spectral library for library searching?		
Comments:		
IV.2 Magnetic Tape Storage of GC/MS Electronic Data		

1. Is raw data, including quantitation output files and libraries, archived on magnetic tape?		
2. Is a log of the contents of the raw data magnetic tapes available?		
Comments:		
IV.3 GC/MS Analysis		
1. Does the laboratory have the necessary equipment to perform heated purge and trap analysis on low level soil samples?		
2. Are VOA Samples stored and analyzed an area free from solvents and isolated from the extraction area?		
3. Does the laboratory have instrumentation dedicated for volatile analysis?		
Comments:		
IV.4 SOPs and Recordkeeping- GC/MS Area		
1. Can the instrument operator demonstrate, using the instrument run log, that the following corrective actions have been taken when needed?		
a. Reanalyses when internal standard areas are out.		
b. Dilution when the calibration range is exceeded		
c. Blanks when the previous sample showed saturation		
Laboratory Name:	Yes	No
2. Is the appropriate portion of the SOP available to the analyst at the GC/MS analysis area?		
3. Do the analysts accurately record all GC/MS injections a bound or serially numbered logbook?		
4. Are the GC/MS injection logbooks completed a manner consistent with the laboratory's SOP?		
5. Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?		
Comments:		
IV.5 GC Operation and Maintenance		
1. Are manufacturer's operating manuals readily available to the operator?		
2. Does the laboratory purchase a service contract for instruments used?		

3. Are extensive -house replacement parts available for routine and non-routine maintenance (Spare columns, injector and detector spares, syringes, etc.)?		
4. Does the laboratory perform regular preventive maintenance on the instruments used?		
5. Is a permanent service record maintained a logbook?		
6. Are the instruments properly vented or are appropriate traps place?		
Comments:		
IV.6 SOPs and Recordkeeping GC/EC Area		
1. Is the appropriate portion of the SOP available to the analyst at the analysis area?		
2. Do the analysts record all GC injections a bound or serially numbered logbook?		
3. Are the GC injection logbooks completed a manner consistent with the laboratory's SOP?		
4. Is there evidence of a secondary review of all documents and logbooks by someone other than the person generating the documents?		
V. DATA HANDLING AND REVIEW ITEM		
1. Are data calculations spot-checked by a second person?		
2. Do records indicate that appropriate corrective action has been taken when analytical results fail to meet QC criteria?		
3. Do supervisory personnel review the data and QC results prior to submission?		
Laboratory Name:	Yes	No
COMMENTS:		
VI. DATA MANAGEMENT ITEM		
1. Are data and file access User ID or file password protected?		
2. Are deliverables checked by the system for completeness and accuracy?		
3. Is an estimated data entry error rate determined and recorded?		
4. Are the "actual" hardcopy deliverables inspected by the internal QC process?		
5. Are resubmitted deliverables inspected prior to submission?		
6. When changes to deliverables are required, are the changes properly documented? (rationale, review, initials)		
7. Are user manuals and operations/systems manuals available?		
8. Is a written software test and acceptance plan available for installation of system changes?		

Comments:		
VII. QUALITY ASSURANCE INTERNAL INSPECTIONS **ITEM** **VII.1 Records of Internal Quality Assurance Audits**		
1. Internal audit sample results.		
2. Extraction personnel - initial determination of extraction recoveries.		
3. Records of personnel training and experience.		
4. Documentation of method sensitivity.		
Comments:		
VII.2 What is the frequency and type of internal audits? **(Random, regularly scheduled, spot check) (Compare the dates specified the laboratory's SOP and QAP with the dates of actual occurrence)**		
Laboratory Name:	**Yes**	**No**
VII.3 Can the laboratory demonstrate, through QA records and reports, the sequence of problem identification, corrective action, and resumption of analysis?		
Comments:		
VII.4 Does the Quality Assurance Officer maintain records of laboratory performance, such as precision and accuracy charts of laboratory spikes?		
Comments:		
VIII. QUALITY ASSURANCE PLAN **ITEM**		
VIII.1 Is a written QA Plan (QAP) available?		
VIII.2 Does the QAP contain the following sections?		
1. Organization and Policy?		
2. Facilities and Equipment?		
3. Document Control?		
4. Analytical Methodology?		
5. Data Generation?		

6. Quality Control?		
7. Quality Assurance?		
Comments:		
IX. LABORATORY STANDARD OPERATING PROCEDURES (SOPs) ITEM		
IX.1 Is a set of SOPs available?		
IX.2 Do the SOPs adequately address the following topics?		
1. Evidentiary SOPs.		
2. Sample receipt and storage.		
3. Sample preparation.		
4. Glassware cleaning.		
Laboratory Name:	Yes	No
5. Calibration (Balances).		
6. Analytical procedures (for each analytical system).		
7. Maintenance activities (for each analytical system).		
8. Analytical Standards.		
9. Data reduction procedures.		
10. Documentation policy/procedures.		
11. Data validation/self-inspection system.		
12. Data management and handling.		
Comments:		
X. ORGANIZATIONAL AND PERSONNEL SUMMARY (See also Key Personnel List) ITEM		
X.1 Does the Laboratory Quality Assurance Officer report to senior management levels?		
X.2 Do personnel assigned to this project have the appropriate educational background to success fully accomplish the objectives of the program?		
X.3 Is the organization adequately staffed to meet project commitments a timely manner?		
X.4 Were all key personnel available? (List those not available the comments section.)		

Comments:		
XI. LABORATORY CAPACITY **ITEM**		
XI.1 Does the laboratory have the minimum analytical instrumentation required for the contract?		
XI.2 Does the laboratory have minimum technical and administrative personnel required for the contract?		
XI.3 Does the laboratory have an adequate sample and data tracking system to handle the number of analyses contracted?		
Laboratory Name:	**Yes**	**No**
Comments:		
XII. SUMMARY **ITEM**		
XII.1 Do responses to the evaluator indicate that project and supervisory personnel are aware of QA/QC and its importance to the project?		
XII.2 Do project and supervisory personnel place a positive emphasis on QA/QC?		
XII.3 Have responses with respect to the QA/QC aspects of the project been open and direct?		
Comments:		

SECTION M - EVALUATION FACTORS FOR AWARD

M.1 BASIS OF AWARD: Reference Clause L.14 in Section L of this RFP.

M.2 EVALUATION OF OPTIONS (FAR 52.217-5) (JUL 1990)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for the base period, and all option periods. Evaluation of the options will not obligate the Government to exercise the option(s).

M.3 EVALUATION OF PRICE

The evaluation methodology described in Section L in the Price Proposal Instructions shall constitute the method used to evaluate an offeror’s price for purposes of contract award. The Government will not select an offeror for award solely on the basis of a superior capability without concern for the amount of its price. Reference Clause L.14 in Section L of this RFP.

M.4 SPECIAL STANDARDS OF RESPONSIBILITY

Reference Clause L. 14, in Section L, entitled “Basis of Award”. Special standards of responsibility include the evaluation of the Laboratory Quality Assurance Program Plan (which is described in Clause L.11, in the Instructions for Preparation of the Technical Proposal, Item #1) and the Facility Inspection.

M.5 EVALUATION FACTORS FOR AWARD

(a) Technical Evaluation Process:

The evaluation process will be divided into two (2) phases. During Phase One the Government will evaluate each offeror’s written technical proposal on the basis of (i) corporate experience, (ii) laboratory facilities and equipment, (iii) personnel, (iv) laboratory quality assurance program, and (v) organization’s past performance as presented in the written technical proposal. All offers determined to be in the competitive range at the conclusion of Phase One will proceed to Phase Two and be evaluated on their ability to perform and to deliver data package for Performance Evaluation (PE) Sample Analysis. The Government will evaluate the results from the analyses and deliverable packages.

(b) **Technical Evaluation Criteria:**

The technical evaluation criteria are listed below along with the points possible for each element:

Phase One

A. Capability

A.1 Technical Proposal: the capability of the Offeror to perform the Statement of Work, as demonstrated in the Technical Proposal..... 15 points

A.2. Corporate Experience..... 10 points

A.3. Facility and Equipment..... 10 points

A.4. Qualifications of Personnel..... 10 points

A.5. Laboratory QA Program..... 40 points

B. Past Performance..... 15 points

Phase 1 Total = **100 points**

Technical Proposals weighted and ranked in Phase One, and determined to be in the competitive range, will move on to Phase Two:

Phase Two

C. Demonstration of Technical Ability

C.1. Performance Evaluation Sample Analysis: Offerors must meet the acceptable minimum of 75% accuracy for PE Sample Analysis.

C.2. PE Sample Data Package: The PE sample data package must meet the minimum completeness (as set forth in Attachment L-4, “Performance Evaluation Sample (PES) Data Package”

Description of Evaluation Criteria

Offerors will be evaluated based on the Technical Proposal (reference Clause L.11, in Section L, Instructions for the Preparation of the Written Technical Proposal–Note: if any statements below conflict with the narrative in Section L, Section L will take precedence):

PHASE I

A. CAPABILITY -- PHASE ONE (85 points)

A.1 Technical Capability (15 points)

The Offeror will be evaluated on the technical narrative in the technical proposal and how well it demonstrates the Offeror’s capability to perform the Statement of Work, Section J, Attachment 1. Reference Clause L.11, in Section L.

A.2 Corporate Experience (10 points)

The offeror will be evaluated on its corporate experience and capability in performing and managing sample preparation and analytical procedures, performing

QA/QC procedures, accurate documentation, their ability to provide analytical services similar in scope (routine and non routine protocol) and complexity to the requirements specified in the statement of work within similar turnaround time frames. The offeror will be evaluated on its experience performing routine analytical and non routine services (the incidence of EPA requiring non-routine services is 10% of the total requirements).

A.3 Facility and Equipment (10 points)

Offerors will be evaluated on their ability to provide the laboratory equipment and facilities necessary (1) to ensure sufficient resources to maintain a successful operation, and (2) to perform the methods described in the statement of work (routine and non routine). Offerors will be evaluated on the extent to which their facilities demonstrate efficient operations and ensure high level of quality assurance and quality control. Offerors will be evaluated on the quantity and variety of their laboratory equipment inventory to provide support for routine and non-routine analytical services. Offerors will be evaluated on their demonstrated availability of a maintenance program (including data systems).

A.4 Qualifications of Personnel (10 points)

a. Key Personnel: Offerors will be evaluated on the demonstrated availability, qualifications, and experience of the proposed key personnel. The proposed key personnel will be evaluated against the minimum qualification requirements for education and relevant experience stated in Attachment B, Minimum Qualifications.

b. Other Personnel: The offerors will be evaluated on their ability to provide the required qualified personnel, other than key personnel, who will be required to perform the Statement of Work.

A.5 Laboratory Quality Assurance Program (40 Points)

The laboratory quality assurance program plan (LQAP) will be evaluated to assess the adequacy and effectiveness of Quality Assurance (QA) policies and Quality Control (QC) procedures currently in place. The LQAP should, at a minimum, comply with ISO/IEC Guide 25: General requirements for the competence of calibration and testing laboratories. Reference the instructions in Section L for the preparation of an LQAP, in Clause L.11, under Laboratory Quality Assurance Plan.

B. PAST PERFORMANCE (15 points) -- Phase One

Offerors' Past Performance will be evaluated using the Past Performance Questionnaire forms (Attachment D) based on the information obtained when the U.S. EPA contacts the references provided on Attachments G-1 and the list of corporate experience. Offerors will be evaluated on previous customer satisfaction in areas including quality of data produced (data substantiated with QC procedures), timeliness of performance, effectiveness of management (including subcontractors), initiative displayed in meeting requirements (timeliness and technical capability), response to technical direction, responsiveness to performance problems, compliance with cost estimates, customer satisfaction and overall performance. All areas will be equally weighted.

In the case of an offeror with respect to which there is no information on past contract performance or with respect to which information on past performance is not available, the offeror may not be evaluated favorably or unfavorably on the fact of past performance. When a determination is made by the Contracting Officer that an offeror has no relevant past performance experience, past performance will receive a neutral rating.

PHASE II

C. DEMONSTRATION OF TECHNICAL ABILITY -- PHASE TWO

C.1 Performance Evaluation Sample (PES) Analysis

PE Sample Analyses Results: Offerors will be evaluated on the demonstrated ability to follow the analytical methods prescribed and the degree to which they meet the minimum accuracy (as set forth in Attachment G-4, Performance Evaluation Sample (PES) Score Sheet) of all parameters analyzed. Each sample in the data package shall be evaluated separately and each sample must receive a passing score. Offerors will be evaluated on the analytical results from the PE Sample Analysis. An offeror which does not meet the acceptable minimum of 75% accuracy for the PE Sample Analysis will not receive any further consideration for contract award.

C.2 Performance Evaluation Sample (PES) Data Package

Data Package: For those Offerors passing the PE Analysis, per Section C.1 above, the PE sample data package shall be evaluated. Offerors will be evaluated on the demonstrated ability to provide a Data Package which meets the minimum completeness (as set forth in Section L, Attachment L-4, “Performance Evaluation Sample (PES) Data Package”).

The Data Packages of offerors will be evaluated to ensure that the QC procedures were applied, at the proper frequency, within the acceptance limits, and corrective actions were performed as required. Emphasis will be placed, in order of importance, on the following elements of the data package: Quality Control Requirements, Reporting and Deliverables, Raw Data, and EPA Shipping/Receiving Documents.

Note: Offerors shall be aware that their initial response for this criterion will be the only response evaluated and scored. Discussions will not be conducted, clarifications will not be requested and no interrogatories will be asked for this criterion. Revisions to the initial response to the PE sample will not be requested nor will they be considered for evaluation.

USEPA REGION IX - SAN FRANCISCO, CA
REGIONAL ENVIRONMENTAL ANALYTICAL PROCUREMENT (REAP)

STATEMENT OF WORK

FOR

LABORATORY ANALYSES

OF

INORGANIC AND ORGANIC SAMPLES

Multi-Media, Multi-Concentration

Document Number REAP-01.1

STATEMENT OF WORK

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STATEMENT OF WORK
LABORATORY ANALYSES OF ORGANIC AND INORGANIC SAMPLES
Region IX Regional Environmental Analytical Procurement

Period of Performance:

EPA Project Officer*: To be determined at contract award
Email Address:

EPA Alternate Project Officer*: To be determined at contract award

EPA Contracting Officer: David Katzki; ph. 415/744-1615
Email Address: katzki.david@epa.gov

EPA Contract Specialist: Jeri Simmons; ph. 415/744-1616
Email Address: simmons.jeri@epa.gov

* For the purposes of this Statement of Work, the EPA Project Officer (PO), and the Alternate Project Officer (APO), are Contracting Officer Technical Representatives (COTR) and the PO (or Alternate PO, if the PO is not available) is also the Region IX Sample Control Coordinator (RSCC).

Note: wherever it reads “laboratory” in the Statement of Work it shall mean “contractor,” and vice versa.

1.0 PURPOSE

The purpose of this Statement of Work (SOW) is to set forth the Environmental Protection Agency’s (EPA) requirements for the Region IX Regional Environmental Analytical Procurement (REAP), which will provide analytical data for use by U.S. EPA Region IX in support of its environmental needs, including, but not limited to, site investigation and clean-up activities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA).

2.0 DESCRIPTION OF SERVICE

This REAP SOW sets forth EPA’s requirements for organic and inorganic analytical services. The laboratory is to apply EPA analytical methods, which have been provided in Attachment 2, for the isolation, detection and quantitative measurement of organic and inorganic parameters in air, water, and/or soil/sediment/solid environmental samples. This SOW also describes how EPA will evaluate the data. The target compound and/or analyte list may be designated as all target compounds and analytes listed in Attachment 2, or a subset of those compounds and analytes, and will be coordinated prior to sampling.

3.0 INTRODUCTION TO THE SOW.

The SOW is comprised of this document, four attachments, and six appendices under Attachments 1 and 2. Attachment 1 contains a description of reporting and deliverables requirements. Attachment 2 provides data quality indicator (DQI) tables and specifies the target compound and analyte lists for this SOW with the contract-required quantitation limits (CRQLs) for all sample matrices. Attachment 3 provides descriptions of required quality assurance/quality control (QA/QC), standard operating procedures (SOPs), and

procedures used for evaluating the performance of an analytical method, QA/QC performance, and the reporting of data. Attachment 4 contains chain-of-custody and sample documentation requirements which the Contractor shall follow.

4.0 REQUIREMENTS

4.1 For each sample, the Contractor shall perform the tasks described in this section, unless otherwise directed by the PO. Specific requirements for each task are detailed in the Attachments as referenced. The Contractor is required to appoint one key point of contact (POC) who will be responsible for the management and oversight of all of the Contractor's work under this Statement of work, to ensure the Government's requirements are met, including the delivery of high quality data packages. The POC is required to monitor and oversee the Contractor's performance of work under this SOW, which includes the Attachments and Appendices shown in Section 3.0 above. The EPA Project Officer will communicate with the POC for the Contractor on a variety of issues, including clarifying the Government's technical requirements, discussing performance issues, deliverables, schedules, etc. The Contractor's POC shall be familiar with all aspects of this SOW and subject contract.

TASK 1: CHAIN OF CUSTODY

4.1.1 Chain-of-Custody. The Contractor shall receive and maintain samples under chain-of-custody procedures as specified in Attachment 4. All associated document control and inventory procedures shall be documented and followed. This documentation shall be reported as part of the Complete Sample Delivery Group File (CSF) (see Attachment 1).

4.1.2 Sample Scheduling/Shipments. Sample shipments to the Contractor's facility will be scheduled and coordinated by the Project Officer (PO). The Contractor shall coordinate with the PO, as necessary throughout the process of sample scheduling, shipment, analysis and data reporting.

4.1.2.1 Samples will be shipped routinely to the Contractor through an overnight delivery service. The Contractor shall be available to receive sample shipments when the delivery service is operating, including Saturdays. In rare instances, it may be necessary for the Contractor to pick-up samples at the nearest servicing airport, bus station, or other carrier service (i.e., UPS) within the Contractor's geographical area. The Contractor will be given a minimum of 24 hours notification when a sample delivery will be made to a location other than the Contractor's facility or after the Contractor's normal business hours.

4.1.2.2 The Contractor shall open the cooler(s) immediately upon receipt. If there are problems with the samples (e.g., mixed media, containers broken or leaking) or sample documentation/paperwork (e.g., Chain-of-Custody/Packing Lists not included with shipment, sample numbers on containers do not correspond to sample numbers listed on Chain-of-Custody/Packing Lists, custody seals not intact or missing), the Contractor shall immediately contact the PO for resolution. The Contractor shall notify the PO regarding any problems and laboratory conditions that affect the timeliness and accuracy of analyses and data reporting. In particular, the Contractor shall notify the PO in advance regarding sample data that will be delivered late and shall specify the estimated delivery date.

4.1.3 Sample Cooler Temperature. To effectively monitor the temperature of the sample shipping cooler, a temperature blank will be included with each cooler shipped. The temperature blank will be clearly labeled.

4.1.3.1 The Contractor shall use the temperature blank to determine the cooler

temperature. The temperature of the sample shipping cooler shall be measured and recorded immediately upon receipt and subsequent opening of the cooler, and prior to unpacking the samples or removing the packing material.

4.1.3.1.1 To determine the temperature of the cooler, the contractor shall locate the cooler temperature blank bottle in the sample shipping cooler, remove the cap and insert a calibrated thermometer into the cooler temperature blank bottle. Prior to recording the temperature, the Contractor shall allow a minimum of 3 minutes, but not greater than 5 minutes, for the thermometer to equilibrate with the liquid in the bottle. At a minimum, the calibrated thermometer ($\pm 1^{o}C$) shall have a measurable range of at least 0 to 20 degrees Celsius. Other devices which can measure temperature may be used if they can be calibrated to $\pm 1^{o}C$ and have a minimum range of 0 to $20^{o}C$.

4.1.3.1.2 If the temperature of the sample shipping cooler's temperature blank exceeds $10^{o}C$, the contractor shall contact the PO and report the cooler temperature. The PO will determine whether or not sample analysis(es) should proceed and will notify the laboratory of the PO’s decision. The laboratory shall document the PO’s decision in the sample delivery group (SDG) narrative. Also in the SDG narrative, the laboratory shall list by fraction and sample number, all samples which were shipped in a cooler which exceeded 10 degrees Celsius. (See Section 4.3.1 for a definition of SGD.)

4.1.3.1.3 The Contractor shall record the temperature of the cooler on the DC-1 Form, under Item 3 - Cooler Temperature, and in the SDG narrative.

4.1.4 Receipt of Samples. The Contractor shall accept all samples scheduled by EPA and analyze all samples unless otherwise notified by the Project Officer.

4.1.5 Return of Coolers. The Contractor shall be required to routinely return sample shipping containers (e.g., coolers) to the appropriate sampling office within fourteen (14) calendar days following shipping receipt. The Contractor will be provided a shipping mechanism (e.g., a return airbill with a third party billing number) by the originating sampler.

4.1.5.1 The third party billing number(s) provided by the samplers shall be used only for the return of shipping containers (e.g., coolers).

4.1.5.2 The Contractor shall remove all samples, ice, water, packing, and/or other materials from the coolers before each pickup. The Contractor shall determine from visual inspection that the coolers are clean and dry.

TASK 2: SAMPLE PREPARATION AND ANALYSIS

4.2 The Contractor shall log in, prepare and analyze samples in accordance with the following procedures.

4.2.1 Sample analyses will be scheduled by groups of samples, each defined as a Case and identified by a unique EPA Case number assigned by the PO. A Case signifies groups of samples collected at one site or geographical area over a finite time period, and will include one or more field samples with associated blanks and QC samples. Samples may be shipped to the Contractor in a single shipment or multiple shipments over the specified period of time, depending on the size of the Case.

4.2.2 A Case consists of one or more Sample Delivery Group(s). A Sample Delivery Group (SDG) is defined by the following, whichever is most

frequent:

- Each Case of field samples received, OR
- Each 20 field samples within a Case, OR
- Each 14 calendar day period (7 calendar day period for 14-day data turnaround contracts and 2 calendar day period for 7-day data turnaround contracts) during which field samples in a Case are received (said period beginning with the receipt of the first sample in the SDG).

4.2.2.1 Within the above SDG framework, samples are to be batched and analyzed in such a fashion that technical holding times are not exceeded. For example, if the technical holding time is 48 hours from time of collection, samples cannot be held for 14 days before analysis is started. In these instances, some QC samples, such as instrument/method blanks, may need to run more frequently.

4.2.2.2 A Case will have appropriate Laboratory QA/QC samples (matrix spike/matrix spike duplicate and/or duplicate samples) designated and identified on the accompanying Chain-of-Custody/Packing Lists. There will usually be one set of QA/QC samples per SDG. The EPA may require additional QA/QC sample analyses, upon Regional request, for which the Contractor will be paid at the fixed unit prices in Schedule B of Contract No. xxxxxxxxxx, if the work product is in accordance with this SOW.

4.2.2.3 Samples may be assigned to SDGs by matrix (i.e., all soils in one SDG, all aqueous samples in another), at the discretion of the laboratory. Such assignment shall be made at the time the samples are received, and shall <u>not</u> be made retroactively. Note that PE samples received within a Case shall be assigned to a SDG containing field samples for that Case.

4.2.3 Preparation Techniques. The Contractor is required to prepare samples according to the procedures outlined in the methods described in Attachment 2.

4.2.4 Analytical Techniques. The target compounds and analytes listed in Attachment 2 shall be identified and quantitated as described in the methods specified in Attachment 2.

4.2.4.1 Approximately 10% of the samples submitted under this contract will be for analyses not covered by this SOW. The modifications may include, but are not limited to, changes to the stated detection limits, additional compounds or analytes, and other matrices, such as fish and other organic material.

4.2.5 The Contractor shall communicate with the PO, as necessary, throughout the process of sample preparation and analysis to ensure that samples are properly processed to meet all technical acceptance criteria set forth in this SOW. The Contractor is responsible for meeting the technical acceptance criteria as described in Attachment 2.

TASK 3: QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

4.3 Quality Assurance/Quality Control Procedures. The Contractor shall strictly adhere to all QA/QC procedures prescribed in Attachments 2 and 3. Records documenting the use of the protocol shall be maintained in accordance with the document control procedures prescribed in Attachment 4, and shall be reported in accordance with Attachment 1.

4.3.1 The Contractor shall follow an EPA-approved Laboratory Quality Assurance Plan (LQAP) with the objective of providing sound analytical chemical measurements. The QA/QC program described in the LQAP shall incorporate the quality control procedures, any necessary corrective action, and all documentation required during data generation, as well as the quality assessment measures performed by management to ensure that data production is in accordance with the EPA approved LQAP, as specified in Attachment 3.

4.3.2 Additional quality control shall include, but not be limited to, laboratory audits and the analysis of performance evaluation (PE) samples submitted to the laboratory by the Agency. Poor performance of such quality control measures could result in corrective action on the part of the laboratory and/or punitive damages, in accordance with EPA Contracting Officer decisions.

TASK 4: REPORTING REQUIREMENTS

4.4 EPA has provided to the Contractor formats for the reporting of data (Attachment 1). The Contractor shall be responsible for completing and returning analysis data sheets in the format specified in this SOW within the time specified in the Contract Performance/Delivery Schedule in Attachment 1.

4.4.1 Use of formats other than those designated by EPA are acceptable provided that all necessary information is included and the format proposed has been reviewed and pre-approved by the PO.

4.4.1.1 The data reported on the hardcopy data forms and/or electronic deliverable shall contain accurate information. If discrepancies are found during government review, the Contractor shall be required to resubmit the corrected hardcopy and/or electronic forms at no additional cost to the Agency.

4.4.1.2 If required by the EPA PO, the Contractor shall transfer hardcopy information on GC/MS tape. The Contractor shall comply with the GC/MS audit requirements set forth in Attachment 3, starting on page 3-11.

GENERAL REQUIREMENTS

(f) MINIMUM QUALIFICATIONS

Technical and Management Capability: Minimum Qualifications.

Personnel. The Contractor shall have personnel with the necessary education, training, technical knowledge and experience for conducting work that meets the requirements of this Statement of Work. Each technical staff member must have a combination of experience and education to adequately demonstrate a specific knowledge of their particular function, a general knowledge of laboratory operations, test methods, quality assurance/quality control procedures, and records management.

Instrumentation. The Contractor shall have the equipment (including reference materials) required for the correct performance of analytical test methods under this SOW and not cause unjust delays in the scheduling of sample analysis or meeting holding times. All equipment shall be properly maintained, inspected and cleaned. Maintenance procedures shall be documented.

Facilities. The Contractor shall maintain a facility, test areas, energy

sources, lighting, heating and ventilation so as to facilitate proper performance of the analytical test methods. The environment in which these activities are undertaken shall not invalidate the results or adversely affect the required accuracy of measurement. The Contractor shall provide for the effective control, monitoring, and recording of environmental conditions as appropriate. Such environmental conditions may include, biological sterility, dust, electromagnetic interference, humidity, mains voltage, and temperature.

B. DELIVERY AND SCHEDULE

See Table 1 below (next page)for a Summary of the Deliverables.

C. PERFORMANCE MEASUREMENTS AND CORRECTIVE ACTION

If the Contractor fails to adhere to the requirements listed in this SOW, the Contractor may expect, but the Agency is not limited to, the following actions: reduction in the number of samples sent under this contract, suspension of sample shipment to the Contractor, a GC/MS tape audit, a data package audit, an on-site laboratory evaluation, a remedial performance evaluation sample, and/or contract sanctions, such as a Cure Notice.

EPA reserves the right to utilize another contractor if work under this SOW does not meet EPA’s quality assurance standards, is technically unacceptable under standard industrial practices, and/or if work isn’t conducted in accordance with good business practices. EPA reserves the right to utilize another contractor in the case of a conflict of interest as determined by the EPA Contracting Officer.

Corrective actions, as determined by the EPA Contracting Officer, will be taken by EPA, only after discussing performance issues with the Contractor and obtaining the Contractor’s input into the issues.

Table 1, Statement of Work

SUMMARY OF DELIVERABLES FOR CONTRACT NO. ----------

REGION IX REAP: LABORATORY ANALYTICAL SERVICES OR ORGANIC & INORGANIC SAMPLES

DELIVERABLE	Task/Attachment	No. of Copies	Due Date	Distribution*
Lab Quality Assurance Plan (LQAP) - Draft (to include draft Evidentiary SOPs)	SOW:}4.3.1 Attchmt 3:}3.3.1.1 Attchmt 4:} 2.0	Three (3)	Within 28 days of contract award	EPA PO
EPA Comments on draft LQAP	See Above	--	Within 42 days of draft LQAP receipt	EPA PO
Lab Quality Assurance Plan (LQAP) -final	See Above	Three (3)	Within 14 days of receipt of EPA's review comments on the draft	EPA PO
LQAP Amendments	See Above, and: Attchmt 3:}3.3.2	Three (3)	As required by EPA	EPA PO
Analytical SOPs - draft	Attchmt 3:}4.4.1.1	Two (2)	within 45 days of contract award	EPA PO
EPA Comments on draft Analytical SOPs	See Above	--	within 45 days of receipt of draft	EPA PO
Analytical SOPs - final	See Above	Two (2)	within 14 days of receipt of EPA's review	EPA PO
7-Day Summary Data Package**	Attchmt 1:} 2.1 & 2.2	Two (2)	Within 7 days of Receipt of Sample(s)	EPA PO
14-Day Summary Data Package**	See Above	Two (2)	Within 14 days of Receipt of Sample(s)	EPA PO
35-Day Complete Data Package**	Attchmt 1:}3.0 & 4.0	Two (2)	Within 35 days of Receipt of Sample(s)	EPA PO
GC/MS Tapes	SOW:}4.4.1.2 Attchmt 3:} 8.0	One (1)	As required by EPA but not less than annually	EPA PO
Reply to D.V. Questions	SOW:} 4.4.1.1	Two (2)		EPA PO

*** The EPA Project Officer is to receive all deliverables, with a copy of the Deliverable Transmittal Letters to the EPA Contracting Officer only.**

****which includes the Electronic Data Deliverable (EDD) - reference Attachment 1, Sections 3.3.1 and 4.3.1**

ALIQUOT - a measured portion of a sample, or solution, taken for sample preparation and/or analysis.

ANALYSIS DATE/TIME - the date and military time of the injection of the sample, standard, or blank into the GC/MS or GC system.

BAR GRAPH SPECTRUM - a plot of the mass-to-charge ratio (m/z) versus relative intensity of the ion current.

BLANK - an analytical sample designed to assess specific sources of laboratory contamination. See individual types of Blanks: Method Blank; Instrument Blank, Storage Blank, and Sulfur Blank.

BREAKDOWN - a measure of the decomposition of certain analytes (DDT and Endrin) into by-products.

4-BROMOFLUOROBENZENE (BFB) - the compound chosen to establish mass spectral instrument performance for volatile (VOA) analyses.

CALIBRATION FACTOR (CF) - a measure of the gas chromatographic response of a target analyte to the mass or concentration injected. The calibration factor is analogous to the Relative Response Factor (RRF) used in the Volatile and Semivolatile fractions.

CASE - a finite, usually predetermined number of samples collected over a given time period from a particular site. Case numbers are assigned by the Region. A Case consists of one or more Sample Delivery Groups.

CHARACTERIZATION - a determination of the approximate concentration range of compounds of interest used to choose the appropriate analytical protocol.

CONCENTRATION LEVEL (low or medium) - characterization of soil samples or sample fractions as low concentration or medium concentration is made on the basis of the laboratory's preliminary screen, <u>not</u> on the basis of information entered on the Traffic Report by the sampler.

CONTAMINATION - a component of a sample or an extract that is not representative of the environmental source of the sample. Contamination may stem from other samples, sampling equipment, while in transit, from laboratory reagents, laboratory environment, or analytical instruments.

CONTINUING CALIBRATION - analytical standard run every 12 hours to verify the initial calibration of the system.

CONTINUOUS LIQUID-LIQUID EXTRACTION - used herein synonymously with the terms continuous extraction, continuous liquid extraction, and liquid extraction. This extraction technique involves boiling the extraction solvent in a flask and condensing the solvent above the aqueous sample. The condensed solvent drips through the sample, extracting the compounds of interest from the aqueous phase.

DATE - MM/DD/YY - where MM = 01 for January, 02 for February, ... 12 for December; DD = 01 to 31; YY = 94, 95, 96, 97, etc.

DAY - unless otherwise specified, day shall mean calendar day.

DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP) - compound chosen to establish mass spectral instrument performance for semivolatile analysis.

EXTRACTABLE - a compound that can be partitioned into an organic solvent from the sample matrix and is amenable to gas chromatography. Extractables include semivolatile (BNA), pesticide/Aroclor compounds, and herbicides.

EXTRACTED ION CURRENT PROFILE (EICP) - a plot of ion abundance versus time (or scan number) for ion(s) of specified mass(es).

GAS CHROMATOGRAPH (GC) - the instrument used to separate analytes on a stationary phase within a chromatographic column. The analytes are volatized directly from the sample or sample extract, or injected as extracts. Depending on the analytical method, the compounds are detected by either a Mass Spectrometer (GC/MS), Electron Capture Detector (GC/EC), Flame Ionization Detector (GC/FID) or a Nitrogen-Phosphorus Detector (GC/NPD).

GEL PERMEATION CHROMATOGRAPHY (GPC) - a size-exclusion chromatographic technique that is used as a cleanup procedure for removing large organic molecules, particularly naturally occurring macro-molecules such as lipids, polymers, viruses, etc.

IN-HOUSE - at the Contractor's facility.

INITIAL CALIBRATION - analysis of analytical standards for a series of different specified concentrations; used to define the linearity and dynamic range of the response of a detector system (e.g., MS, ECD, FID or NPD) to the target compounds.

INITIAL CALIBRATION VERIFICATION - analytical standard, from a source other than that used to prepare the initial calibration standards, run immediately after the initial calibration to verify the preparation and concentration of the initial calibration standards.

INTEGRATION SCAN RANGE - the scan number of the scan at the beginning of the area of integration to the scan number at the end of the area of integration (performed in accordance with Exhibit D).

INTEGRATION TIME RANGE - the retention time at the beginning of the area of integration to the retention time at the end of the area of integration.

INTERNAL STANDARDS - compounds added to every standard, blank, matrix spike, matrix spike duplicate, sample (for volatiles and modified 524.2 volatiles), and sample extract (for semivolatiles) at a known concentration, prior to analysis. Internal standards are used as the basis for quantitation of the target compounds.

INSTRUMENT BLANK - a blank designed to determine the level of contamination associated with the analytical instruments.

INSUFFICIENT QUANTITY - when there is not enough volume (water sample) or weight (soil/sediment/solid or oily sludge/waste) to perform any of the required operations: sample analysis or extraction, percent moisture, MS/MSD, etc. Exhibit D provides guidance for addressing this situation.

LABORATORY - synonymous with Contractor as used herein.

LEVEL OF EFFORT (LOE) - A level of effort portion is included in the contract which provides the Contractor and the Agency a means of addressing problematic field samples.

m/z - Mass to charge ratio.

MATRIX - the predominant material of which the sample to be analyzed is composed. For the purpose of this SOW, a sample matrix is either water, soil/sediment/solid or oily sludge/waste. Matrix is <u>not</u> synonymous with phase (liquid or solid).

MATRIX EFFECT - in general, the effect of a particular matrix (water or soil/sediment/solid or oily sludge/waste) on the constituents with which it contacts. This is particularly pronounced for clay particles which may adsorb chemicals and catalyze reactions. Matrix effects may prevent extraction of target analytes, and may affect surrogate recoveries. In addition, nontarget analytes may be extracted from the matrix causing interferences.

MATRIX SPIKE - aliquot of a matrix (water or soil/sediment/solid or oily sludge/waste) fortified (spiked) with known quantities of specific compounds and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery.

MATRIX SPIKE DUPLICATE - a second aliquot of the same matrix as the matrix spike (above) that is spiked in order to determine the precision of the method.

METHOD BLANK - an analytical control consisting of all reagents, internal standards and surrogate standards (or SMCs for VOA), that is carried throughout the entire analytical procedure. The method blank is used to define the level of laboratory, background and reagent contamination.

NARRATIVE (SDG Narrative) - portion of the data package which includes laboratory, contract, Case and sample number identification, and descriptive documentation of any problems encountered in processing the samples, along with corrective action taken and problem resolution. Complete SDG Narrative specifications are included in Exhibit B.

PERCENT DIFFERENCE (%D) - As used in this SOW and elsewhere to compare two values, the percent difference indicates both the direction and the magnitude of the comparison, i.e., the percent difference may be either negative, positive, or zero. (In contrast, see relative percent difference.)

PERCENT MOISTURE - an approximation of the amount of water in a soil/sediment/solid sample made by drying an aliquot of the sample at 105 C. The percent moisture determined in this manner also includes contributions from all compounds that may volatilize at or below 105 C, including water. Percent moisture may be determined from decanted samples and from samples that are not decanted.

PERFORMANCE EVALUATION MIXTURE - a calibration solution of specific analytes used to evaluate both recovery and percent breakdown as measures of performance.

PRIMARY QUANTITATION ION - a contract specified ion used to quantitate a target analyte.

PROTOCOL - describes the exact procedures to be followed with respect to sample receipt and handling, analytical methods, data reporting and deliverables, and document control. Used synonymously with Statement of Work (SOW).

PURGE AND TRAP (DEVICE) - analytical technique (device) used to isolate volatile (purgeable) organics by stripping the compounds from water or soil/sediment/solid by a stream of inert gas,

trapping the compounds on an adsorbent such as a porous polymer trap, and thermally desorbing the trapped compounds onto the gas chromatographic column.

PURGEABLES - volatile compounds.

REAGENT WATER - water in which an interferant is not observed at or above the minimum quantitation limit of the parameters of interest.

RECONSTRUCTED ION CHROMATOGRAM (RIC) - a mass spectral graphical representation of the separation achieved by a gas chromatograph; a plot of total ion current versus retention time.

REGIONAL ENVIRONMENTAL ANALYTICAL PROCUREMENT (REAP)

RELATIVE PERCENT DIFFERENCE (RPD) - As used in this SOW and elsewhere to compare two values, the relative percent difference is based on the mean of the two values, and is reported as an absolute value, i.e., always expressed as a positive number or zero. (In contrast, see percent difference.)

RELATIVE RESPONSE FACTOR (RRF) - a measure of the relative mass spectral response of an analyte compared to its internal standard. Relative Response Factors are determined by analysis of standards and are used in the calculation of concentrations of analytes in samples. RRF is determined by the following equation:

$$RRF = \frac{A_x}{A_{is}} \times \frac{C_{is}}{C_x}$$

Where,

A = area of the characteristic ion measured
C = concentration, or amount (mass)
is = internal standard
x = analyte of interest

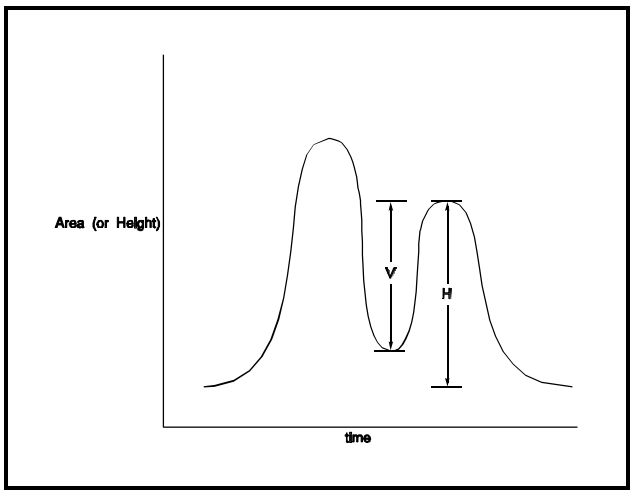
RELATIVE RETENTION TIME (RRT) - the ratio of the retention time of a compound to that of a standard (such as an internal standard).

$$RRT = \frac{RT_c}{RT_{is}}$$

Where,

RT_c = Retention time for a target or surrogate compound in continuing calibration.
RT_{is}= Retention time for the internal standard in calibration standard or in a sample.

RESOLUTION - also termed separation or percent resolution, the separation between peaks on a chromatogram, calculated by dividing the depth of the valley between the peaks by the peak height of the smaller peak being resolved, multiplied by 100.



For GC analyses the X-axis shall be displayed such that a data reviewer can calculate the % Resolution.

RESOLUTION CHECK MIXTURE - a solution of specific analytes used to determine resolution of adjacent peaks; used to assess instrumental performance.

RESPONSE - or Instrumental Response: a measurement of the output of the GC detector (MS, ECD, FID or NPD) in which the intensity of the signal is proportionate to the amount (or concentration) detected. Measured by peak area or peak height.

RETENTION TIME (RT) - the time a target analyte is retained on a GC column before elution. The identification of a target analyte is dependent on a target compound's retention time falling within the specified retention time window established for that compound. Retention time is dependent on the nature of the column's stationary phase, column diameter, temperature, flow rate, and other parameters.

SAMPLE - a portion of material to be analyzed that is contained in single or multiple containers and identified by a unique sample number.

SAMPLE DELIVERY GROUP (SDG) - a unit within a single Case that is used to identify a group of samples for delivery. An SDG is a group of 20 or fewer field samples within a Case, received over a period of up to 14 calendar days (7 calendar days for 14-day data turnaround contracts). Data from all samples in an SDG are due concurrently. A Sample Delivery Group is defined by one of the following, whichever occurs first:

- All samples within a Case; or
- Every set of 20 field samples within a Case; or
- All samples received within a 14-day calendar period (7-day calendar period for 14-day data turnaround contracts).

Samples may be assigned to Sample Delivery Groups by matrix (i.e., all soil samples in one SDG, all water samples in another), at the discretion of the laboratory.

SAMPLE NUMBER (EPA Sample Number) - a unique identification number designated by EPA to each sample. The EPA sample number appears on the sample Traffic Report which documents information on that sample.

SECONDARY QUANTITATION ION - contract specified ion(s) to be used in quantitation of target analytes when interferences prevent the use of the primary quantitation ion.

SEMIVOLATILE COMPOUNDS - compounds amenable to analysis by extraction of the sample with an organic solvent. Used synonymously with Base/Neutral/Acid (BNA) compounds.

SOIL - used herein synonymously with soil/sediment/solid and sediment.

SONIC CELL DISRUPTOR (SONICATOR) - a device that uses the energy from controlled ultrasound applications to mix, disperse, and dissolve organic materials from a given matrix.

STANDARD ANALYSIS - an analytical determination made with known quantities of target compounds; used to determine response factors.

STORAGE BLANK - reagent water (two 40.0 mL aliquots) stored with samples in an SDG. It is analyzed after all samples in that SDG have been analyzed; and is used to determine the level of contamination acquired during storage.

SULFUR BLANK - a modified method blank that is prepared only when <u>some</u> of the samples in a batch are subjected to sulfur cleanup. It is used to determine the level of contamination associated with the sulfur cleanup procedure. When <u>all</u> of the samples are subjected to sulfur cleanup, then the method blank serves this purpose. When <u>none</u> of the samples are subjected to sulfur cleanup, <u>no</u> sulfur blank is required.

SURROGATES (Surrogate Standard) - for semivolatiles pesticides/Aroclors, Aroclors (only), herbicides, and water soluble organics (GC/NPD or GC/FID), compounds added to every blank, sample, matrix spike, matrix spike duplicate, and standard; used to evaluate analytical efficiency by measuring recovery. Surrogates are brominated, fluorinated, or isotopically labelled compounds not expected to be detected in environmental media.

SYSTEM MONITORING COMPOUNDS - compounds added to every blank, sample, matrix spike, matrix spike duplicate, and standard for volatile and modified 524.2 volatile analyses, and used to evaluate the performance of the entire purge and trap-gas chromatograph-mass spectrometer system. These compounds are brominated or deuterated compounds not expected to be detected in environmental media.

TARGET COMPOUND LIST (TCL) - a list of compounds designated by the Statement of Work (Exhibit C) for analysis.

TENTATIVELY IDENTIFIED COMPOUNDS (TIC) - compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates. Up to 10 peaks not including those tentatively identified as aldol condensation products, (those greater than 10% of the peak areas or heights of nearest internal standard) are subjected to mass spectral library searches for tentative identification.

TIME - when required to record time on any deliverable item, time shall be expressed as Military Time, i.e., a 24-hour clock.

TRAFFIC REPORT (TR) - an EPA sample identification form filled out by the sampler, which accompanies the sample during shipment to the laboratory and which documents sample condition and receipt by the laboratory.

TWELVE-HOUR TIME PERIOD - The twelve (12) hour time period for GC/MS system instrument performance check, standards calibration (initial or continuing calibration), and method blank analysis begins at the moment of injection of the DFTPP or BFB analysis that the laboratory submits as documentation of instrument performance. The time period ends after 12 hours have elapsed according to the system clock. For GC analyses, the twelve hour time period in the analytical sequence begins at the moment of injection of the instrument blank that precedes sample analyses, and ends after twelve hours have elapsed according to the system clock.

VALIDATED TIME OF SAMPLE RECEIPT (VTSR) - the date on which a sample is received at the Contractor's facility, as recorded on the shipper's delivery receipt and Sample Traffic Report.

VOLATILE COMPOUNDS - compounds amenable to analysis by the purge and trap technique. Used synonymously with purgeable compounds.

WIDE BORE CAPILLARY COLUMN - a gas chromatographic column with an internal diameter (ID) that is greater than or equal to 0.53 mm. Columns with lesser diameters are classified as narrow bore capillary columns.

GLOSSARY FOR INORGANICS

ABSORBANCE - a measure of the decrease in incident light passing through a sample into the detector.

ALIQUOT - a measured portion of a sample or solution taken for preparation and/or analysis.

ANALYSIS DATE/TIME - the date and military time (24-hour clock) of the <u>introduction</u> of the sample, standard, or blank into the analysis system.

ANALYTE - the element or ion an analysis seeks to determine; the element of interest.

ANALYTICAL SAMPLE - any solution or media introduced into an instrument on which an analysis is performed excluding instrument calibration, initial calibration verification, initial calibration blank, continuing calibration verification and continuing calibration blank. Note the following are all defined as analytical samples: undiluted and diluted samples (EPA and non-EPA), pre-digestion spike samples, duplicate samples, serial dilution samples, analytical spike samples, post-digestion spike samples, interference check samples (ICS), CRQL standards (QLS), laboratory control sample (LCS), preparation blank (PB), and linear range analysis sample (LRS).

ANALYTICAL SPIKE - the spike added to the sample after digestion, if digestion is required, and prior to furnace AA analysis.

AUTOZERO - zeroing the instrument at the proper wavelength. It is equivalent to running a standard blank with the absorbance set at zero.

AVERAGE INTENSITY - the average of multiple injections (exposures).

BACKGROUND CORRECTION - a technique to compensate for variable background contribution to the instrument signal in the determination of trace elements.

BATCH - a group of samples prepared at the same time in the same location using the same method.

BLANK - an analytical sample designed to assess specific sources of laboratory contamination. See individual types of blanks: calibration blank and preparation blank.

CALIBRATION - the establishment of an analytical curve based on the absorbance, emission intensity, or other measured characteristic of known standards. The calibration standards must be prepared using the same type of acid or concentration of acids as used in the sample preparation. Synonymous with initial calibration and instrument calibration as used herein.

CALIBRATION BLANK - a volume of acidified deionized/distilled water designed to determine the level of contamination associated with the analytical instruments.

CALIBRATION STANDARDS - a series of known standard solutions used by the analyst for calibration of the instrument (i.e., preparation of the analytical curve).

CASE - a finite, usually predetermined number of samples collected over a given time period from a particular site. Case numbers are assigned by the Agency. A Case consists of one or more Sample Delivery Groups.

COEFFICIENT OF VARIATION (CV) - the standard deviation as a percent of the arithmetic mean.

CONCENTRATION LEVEL (low or medium) - for inorganics analysis, designation of aqueous samples as Low Level or Medium Level is made on the basis of information entered on the Traffic Report by the sampler.

CONTAMINATION - a component of a sample or a digestate/distillate that is not representative of the environmental source of the sample. Contamination may arise from other samples, sampling equipment, while in transit, from laboratory reagents, laboratory environment, or analytical instruments.

CONTINUING CALIBRATION - analytical standard run every 10 analytical samples or every 2 hours, whichever is more frequent, to verify the calibration of the analytical system.

CONTRACT REQUIRED QUANTITATION LIMIT (CRQL) - minimum level of quantitation acceptable under the contract Statement of Work.

CONTROL LIMITS - a range within which specified measurement results must fall to be compliant. Control limits may be mandatory, requiring corrective action if exceeded, or advisory, requiring that noncompliant data be flagged.

CORRELATION COEFFICIENT - a number (r) which indicates the degree of dependence between two variables (concentration - absorbance). The more dependent they are the closer the value is to one. Determined on the basis of the least squares line.

DATE - MM/DD/YY, where MM = 01 for January, 02 for February, ... 12 for December; DD = 01 to 31; YY = 94, 95, 96, 97, etc.

DAY - unless otherwise specified, day shall mean calendar day.

DIGESTION LOG - an official record of the sample preparation (digestion).

DISSOLVED METALS - analyte elements (metals) of an aqueous sample that pass through a 0.45 um filter before the sample is acidified.

DRY WEIGHT - the weight of a sample based on percent solids. The weight after drying to constant weight in an oven.

DUPLICATE - a second aliquot of a sample that is treated the same as the original sample in order to determine the precision of the method.

EQUIPMENT BLANK - this is any sample that is submitted from the field and is identified as an equipment blank on the Traffic Report.

FIELD SAMPLE - a portion of material received by the Contractor for analysis that is contained in single or multiple containers and identified by a unique EPA Sample Number.

FLAME ATOMIC ABSORPTION (AA) - atomic absorption which utilizes a flame for excitation.

GRAPHITE FURNACE ATOMIC ABSORPTION (GFAA) - atomic absorption which utilizes a graphite cell for excitation.

HOLDING TIME - the elapsed time expressed in days from the date of receipt of the sample by the Contractor until the date of its analysis.

Holding time = (sample analysis date) - (sample receipt date)

INDEPENDENT STANDARD - a Contractor-prepared standard solution that is composed of analytes from a different source than those used in the standards for the initial calibration.

INDUCTIVELY COUPLED PLASMA (ICP) - a technique for the simultaneous or sequential multi-element determination of elements in solution. The basis of the method is the measurement of atomic emission by an optical spectroscopic technique. Characteristic atomic line emission spectra are produced by excitation of the sample in a radio frequency inductively coupled plasma.

IN-HOUSE - at the Contractor's facility.

INITIAL CALIBRATION VERIFICATION - analytical standard, from a source other than that used to prepare the instrument calibration standards, analyzed immediately after the instrument calibration to verify the preparation and concentration of the instrument calibration standards.

INJECTION - introduction of the analytical sample into the instrument excitation system for the purpose of measuring absorbance, emission or concentration of an analyte. May also be referred to as exposure.

INSTRUMENT CALIBRATION - analysis of analytical standards for a series of different specified concentrations; used to define the quantitative response, linearity, and dynamic range of the instrument to the target analytes.

INSTRUMENT DETECTION LIMIT (IDL) - determined by multiplying by three the standard deviation obtained for the analysis of a standard solution (each analyte in reagent water) at a concentration of 3x-5x IDL on three nonconsecutive days with seven consecutive measurements per day.

INSTRUMENT CHECK STANDARD - a standard of known concentrations of the target analytes prepared by the analyst to monitor and verify instrument performance on a daily basis.

INTERFERENCE CHECK SAMPLE - a solution containing both interfering and analyte elements of known concentration that can be used to verify background and interelement correction factors.

INTERFERENTS - substances which affect the analysis for the element of interest.

LABORATORY - synonymous with Contractor as used herein.

LABORATORY CONTROL SAMPLE (LCS) - a control sample of known composition. Aqueous and solid laboratory control samples are analyzed using the same sample preparation, reagents, and analytical methods employed for the EPA samples received.

LABORATORY RECEIPT DATE - the date on which a sample is received at the Contractor's facility, as recorded on the shipper's delivery receipt and Sample Traffic Report. Also referred to as VTSR (validated time of sample receipt).

LEVEL OF EFFORT (LOE) - A level of effort portion is included in the contract which provides the Contractor and the Agency a means of addressing problematic field samples.

LINEAR RANGE, LINEAR DYNAMIC RANGE - the concentration range over which the analytical curve remains linear.

MATRIX - the predominant material of which the sample to be analyzed is composed. For purposes of this SOW, a sample matrix is either water (or aqueous) or soil/sediment/solid or oily sludge/waste. Matrix is <u>not</u> synonymous with phase (liquid or solid).

MATRIX EFFECT - in general, the effect of a particular matrix (water or soil/sediment/solid or oily sludge/waste) on the constituents with which it contacts.

MATRIX MODIFIER - salts or acids used in AA to reduce the effects of chemical interferents, viscosity, and surface tension.

MATRIX SPIKE - aliquot of a sample (water or soil/sediment/solid or oily sludge/waste) fortified (spiked) with known quantities of specific analytes and subjected to the entire analytical procedure in order to indicate the appropriateness of the method for the matrix by measuring recovery.

METHOD OF STANDARD ADDITIONS (MSA) - the addition of 3 increments of a standard solution (spikes) to sample aliquots of the same size. Measurements are made on the original and after each addition. The slope, x-intercept and y-intercept are determined by least-square analysis. The analyte concentration is determined by the absolute value of the x-intercept. Ideally, the spike volume is low relative to the sample volume (approximately 10% of the volume). Standard additions may counteract matrix effects; it will not counteract spectral effects. Also referred to as Standard Additions.

NARRATIVE (SDG Narrative) - portion of the data package which includes laboratory, contract, Case and sample number identification, and descriptive documentation of any problems encountered in processing the samples, along with corrective action taken and problem resolution. Complete SDG Narrative specifications are included in Exhibit B.

PERCENT SOLIDS - the proportion of solid in a soil/sediment/solid sample determined by drying an aliquot of the sample.

PERFORMANCE EVALUATION (PE) SAMPLE - a sample of known composition provided by EPA for Contractor analysis. Used by EPA to evaluate Contractor performance.

POST-DIGESTION SPIKE - the addition of a known amount of standard after digestion.

PREPARATION BLANK (reagent blank, method blank) - an analytical control that contains distilled, deionized water and reagents, which is carried through the entire analytical procedure (digested/distilled and analyzed). An aqueous method blank is treated with the same reagents as a sample with a water matrix; a solid method blank is treated with the same reagents as a soil/sediment/solid or oily sludge/waste sample.

PROTOCOL - describes the exact procedures to be followed with respect to sample receipt and handling, analytical methods, data reporting and deliverables, and document control. Used synonymously with Statement of Work (SOW).

QUALITY CONTROL SAMPLE - a solution having known concentration values to be used to verify the calibration standards.

RAW SAMPLE - the field sample as received by the Contractor.

REAGENT WATER - water in which an interferent is not observed at or above the minimum quantitation limit of the parameters of interest.

REGIONAL ENVIRONMENTAL ANALYTICAL PROCUREMENT (REAP) - USEPA - New England analytical services program.

ROUNDING RULES - If the figure following those to be retained is less than 5, the figure is dropped, and the retained figures are kept unchanged. As an example, 11.443 is rounded off to 11.44.

If the figure following those to be retained is greater than 5, the figure is dropped, and the last retained figure is raised by 1. As an example, 11.446 is rounded off to 11.45.

If the figure following those to be retained is 5, and if there are no figures other than zeros beyond the five, the figure 5 is dropped, and the last-place figure retained is increased by one if it is an odd number or it is kept unchanged if an even number. As an example, 11.435 is rounded off to 11.44, while 11.425 is rounded off to 11.42.

If a series of multiple operations is to be performed (add, subtract, divide, multiply), all figures are carried through the calculations. Then the final answer is rounded to the proper number of significant figures.

See forms instructions (Exhibit B) for exceptions.

RUN - a continuous analytical sequence consisting of prepared samples and all associated quality assurance measurements as required by the contract Statement of Work.

SAMPLE DELIVERY GROUP (SDG) - a unit within a sample Case that is used to identify a group of samples for delivery. An SDG is a group of 20 or fewer samples within a Case, received over a period of up to 14 calendar days (7 calendar days for 14-day data turnaround contracts). Data from all samples in an SDG are due concurrently. A Sample Delivery Group is defined by one of the following, whichever occurs first:

- All samples within a Case; or
- Each set of 20 field samples within a Case; or
- All samples within a Case which are received within a 14-day calendar period (7-day calendar period for 14-day data turnaround contracts).

Samples may be assigned to Sample Delivery Groups by matrix (i.e., all soils in one SDG, all waters in another), at the discretion of the laboratory.

SAMPLE NUMBER (EPA SAMPLE NUMBER) - a unique identification number designated by EPA for each sample. The EPA Sample Number appears on the sample Traffic Report which documents information on that sample.

SENSITIVITY - the slope of the analytical curve, i.e., functional relationship between emission intensity and concentration.

SERIAL DILUTION - the dilution of a sample by a factor of five. When corrected by the dilution factor, the diluted sample must agree with the original undiluted sample within specified limits. Serial dilution may reflect the influence of interferents.

SOIL - synonymous with soil/sediment/solid and sediment as used herein.

STANDARD ANALYSIS - an analytical determination made with known quantities of target analytes.

STOCK SOLUTION - a standard solution which can be diluted to derive other standards.

SUSPENDED - those elements which are retained by a 0.45 um membrane filter.

TARGET ANALYTE LIST (TAL) - a list of analytes designated by the Statement of Work (Exhibit C) for analysis.

TIME - when required to record time on any deliverable item, time shall be expressed as Military Time, i.e., 24-hour clock.

TOTAL METALS - analyte elements (metals) which have been digested prior to analysis and which have not been filtered prior to digestion.

TRAFFIC REPORT (TR) - an EPA sample identification form filled out by the sampler, which accompanies the sample during shipment to the laboratory and which is used for documenting sample condition and receipt by the laboratory.

VALIDATED TIME OF SAMPLE RECEIPT (VTSR) - the date on which a sample is received at the Contractor's facility, as recorded on the shipper's delivery receipt and Sample Traffic Report.

WET WEIGHT - the weight of a sample aliquot including moisture (undried).

10% FREQUENCY - a frequency specification during an analytical sequence allowing for no more than 10 analytical samples between required calibration verification measurements, as specified by the contract Statement of Work.

ATTACHMENT 1

REPORTING AND DELIVERABLES REQUIREMENTS

Attachment 1 - Reporting and Deliverables Requirements

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1.0 Reporting Requirements.

Deliverables are to be in final format and delivered complete with all items included for a particular deliverable, unless the Contracting Officer (C0) amends the items that make up a deliverable, or approves separate delivery of items. Deliverables are due as stated in Table 1 and delivery is considered complete when all of the components of the deliverable are received. If the deliverables are due on a Saturday, Sunday, or federal holiday, then they shall be delivered on the next business day.

The contractor shall provide reports and other deliverables as specified in this Attachment. All reports and documentation must be:

- **Legible;**
- **Clearly labeled and completed in accordance with instructions in this Attachment;**
- **Paginated consecutively in ascending order starting from the Case Narrative;**
- **Copies must be legible.**

2.0 Sample Data Summary Package. The sample data summary packages shall include the items shown below, for organics, and for inorganics, and shall be submitted separately (i.e., separated by rubber bands, clips, or other means) directly preceding the complete sample delivery group (SDG) file. Sample data forms shall be arranged in increasing EPA sample number order, considering both letters and numbers. The SDG number shall be included on all data reporting forms. The sample data summary package shall be arranged in the same manner as the complete SDG file. Complete SDG File shall contain the original sample data package described in Sections 3.0 and 4.0. The sample data summary package shall contain data for all samples in one SDG of the Case, as follows.

2.1 Organic Data Summary Package (include all relevant forms).

1. Environmental Sample Results
2. Initial and continuing calibrations
3. Method blank results
4. Surrogate percent recoveries
5. Matrix spike/matrix spike duplicate (MS/MSD) or laboratory fortified blank/laboratory fortified blank duplicate (LFB/LFBD) percent recoveries (%R)
6. MS/MSD or LFB/LFBD relative percent differences (RPD)
(g) Laboratory duplicate RPD, if applicable
(h) Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) %R and RPD, if applicable
(i) GC/MS Instrument Performance Check
(j) Internal Standard Area and Retention Time Summary
11. Compound Identification and Retention Time Window Determination
12. Analytical Sequence
13. Method detection limits (MDLs)

<u>Sample Data Summary Package for a 7-Day and a 14-Day turnaround time:</u>

The preliminary sample data summary package shall include the items shown below for organics and inorganics. The Sample Delivery Group (SDG) number and Case number shall be included on all data reporting forms within the summary package, and the summary data package shall contain data for all samples in one SDG as follows:

<u>7-Day and 14-Day TAT Organic Data Summary Package</u> (include all relevant forms).
1. Brief case narrative describing any analytical deviations or problems.
2. Sample analysis results
3. Initial and continuing calibrations: summaries
4. Method blank results
5. Surrogate percent recoveries/internal standards
6. Matrix spike/matrix spike duplicate (MS/MSD) or laboratory duplicate, or LCS/LCSD or LFB/LFBD percent recoveries, as applicable.
7. GC/MS tuning summaries

2.2 Inorganic Data Summary Package (include all relevant forms).

1. Environmental Sample Results
2. Initial and continuing calibration verifications
3. Method blanks, initial and continuing calibration blanks, prep blanks
4. ICP interference check sample
5. Matrix spike (MS) percent recoveries
6. Post Digestion spike
7. Laboratory duplicate (LD) relative percent differences
8. Laboratory control sample (LCS) percent recoveries
9. Method of standard additions
10. ICP serial dilution
11. Instrument or method detection limits
12. ICP linear range

(m) ICP Inter-element Correction factors

7-Day and 14-Day TAT Inorganic Data Summary Package (include all relevant forms).

1. Brief case narrative describing any analytical deviations or problems.
2. Sample analysis results
3. Initial and continuing calibrations: summaries
4. Method blank results
5. Matrix spike/laboratory duplicate (MS/LD) percent recoveries

3.0 ORGANIC ANALYSES

The full 35-day turn-around time data package submitted for EPA data validation shall consist of the following six (6) sections:

- Case narrative;
- Chain-of-Custody documentation;
- Summary of results for environmental samples (including quantitation limits);
- Analytical Results Table 1A (see attached example), hardcopy and electronic deliverable in Lotus 123 spreadsheet format;
- Summary of QA/QC results; and
- Raw data.

3.1 Case Narrative

The case narrative shall be written on laboratory letterhead and the release of data to the EPA will be authorized by the laboratory manager or his/her designee. The Case Narrative will consist of the following information, at a minimum:

- Sampler's sample identification and the corresponding laboratory identification;
- Parameters analyzed for each sample and the methodology used. EPA method numbers should be cited when applicable.
- Statements on whether the holding times were met or exceeded;

(n) Detailed description of all problems encountered, and their resolution or lack of resolution;

- Discussion of possible reasons for any QA/QC sample results outside acceptance limits; and
- Observations regarding any occurrences which may adversely affect sample integrity or data quality.

3.2 Chain-of-Custody Documentation

Original copies of Chain-of-Custody forms for each sample shall be submitted in the data package. The date of receipt and the observed sample condition at the time of receipt must be described on the Chain-of-Custody form. Copies of any internal laboratory tracking documents should be included.

3.3 Summary of Environmental Sample Results (CLP Form I or equivalent)

The following information is to be included in the summary of sample results for each environmental sample (one sample per page). The summary form should follow the CLP format. (Examples will be provided upon request.) Other formats are acceptable provided that all necessary information is included, and the alternative format has been reviewed and pre-approved by the PO.

- **Form Title;**
- **Sampler's sample identification and the corresponding laboratory identification;**
- **Sample collection date;**
- **Sample matrix;**
- **Date of sample (or sub-sample) extraction and weight or volume of sample used for extraction and/or analysis, as applicable;**
- **Date and time of analysis;**
- **Identification of the instrument used for analysis;**
- **Column and detector specifications;**
- **Dilution or concentration factor for the sample;**
- **Percentage of moisture in soil sample;**
- **Method detection limits (MDLs) or quantitation limits;**
- **Analytical results and associated units; and**
- **Definitions for any laboratory data qualifiers used.**

3.3.1 Include an Analytical Results Table 1A, in Lotus 123 spreadsheet format, with results and qualifiers for all samples analyzed in the SDG. Compounds from the target analyte list will be depicted in the first column. The subsequent set of columns, one set for each sample, will consist of results and associated laboratory qualifiers. (See attached example.) Also include as an electronic deliverable, the Lotus 123 spreadsheet on a 3 ½" diskette.

3.4 Summary of QA/QC Sample Results

The following QA/QC sample results must be presented on QC summary forms to facilitate data validation and data quality assessment activities. The summaries should follow the CLP format. (Examples will be provided upon request.) Other formats may be acceptable provided that all necessary information is included, the summary is easy to follow, and the alternative format has been reviewed and pre-approved by the PO. These summaries must have all the information outlined below, as applicable.

3.4.1 Instrument Calibration (for each instrument used)

- **Initial Calibration (CLP Form VI or equivalent)**

Report the analyte concentrations of the initial calibration standards and the date and time of analysis. List the response factor (RF), the average RF, percent relative standard deviation (%RSD), and average retention time for each analyte. The initial calibration (IC) report must also include a sample identifier (ID), associated

injection volume or quantity of standard analyzed, and the acceptance criteria, such as minimum RF values, and associated maximum %RSD values.

- **Continuing Calibration (CLP Form VII or equivalent)**

Report the concentration of the calibration standard used for the continuing calibration and for the mid-level standard, and the date and time of analysis. List the RF, percent difference (%D), and retention time for each analyte.

3.4.2 Method Blank Analysis (CLP Form IV or equivalent)

List the environmental samples and QC analyses associated with each method blank. Report the concentrations of any analytes found in the method blanks.

3.4.3 Surrogate Standard Recovery (CLP Form II or equivalent)

Report the name and concentration of each surrogate compound added. List the percent recoveries of all surrogates in the samples, method blanks, matrix spike/matrix spike duplicates and other QC analyses.

3.4.4 Precision and Accuracy (CLP Form III or equivalent)

- **Matrix spike/matrix spike duplicate (MS/MSD) or laboratory fortified blank/laboratory fortified blank duplicate (LFB/LFBD) analysis.**

  Report the name and concentration of each spiking compound. List the sample results, spiked sample results (concentration and %R), and the relative percent difference (RPD). The acceptance criteria must also be presented to facilitate evaluation of both spike and duplicate results.

- **Laboratory duplicate analysis, as applicable.**

  Report the RPD between duplicate analyses, along with the associated acceptance criteria.

- **Laboratory control sample and laboratory control sample duplicate (LCS/LCSD) analysis.**

  Report the percent recovery (%R) and the relative percent difference (RPD) for each analyte in the LCS/LCSD. List the associated acceptance limits.

- **Laboratory fortified blank and laboratory fortified blank duplicate (LFB/LFBD) analysis.**

  Report the percent recovery (%R) and the relative percent difference (RPD) for each analyte in the LFB/LFBD. List the associated acceptance limits.

3.4.5 GC/MS Instrument Performance Check (CLP Form V or equivalent)

Report the ion abundance criteria and the percent relative abundance. List the EPA sample numbers, laboratory sample ID, and date and time analyzed.

3.4.6 Internal Standard Area and Retention Time Summary (CLP Form VIII or equivalent)

List the EPA sample numbers, the internal standard (IS) area counts, and the retention time for each IS.

3.4.7 Other QC Criteria

- **Compound identification summary and retention time window determination (CLP Form X or equivalent)**

  Report the retention times and the concentrations of each analyte detected in the samples for both primary and confirmation analyses. Report the percent difference between the two quantitative results.

  Retention time windows are established by performing 3 analyses of standards for all analytes being measured throughout the course of a 72-hour period. The

retention time window is defined as plus or minus 3 times the standard deviation of the absolute retention time.

- Analytical sequence.

  Report the analytical sequence for each GC column used for analyses. Report the date of initial calibration and identify the GC column used. List the EPA sample numbers, laboratory sample ID, and date and time analyzed.

- MDL determination.

  List the method detection limits for all compounds.

  Method detection limits are determined by performing at least 7 analyses of standards for all analytes measured at 2-5 times the required detection limit concentrations. The method detection limits are calculated as 3.143 times the standard deviation of the measured values. Refer to 40 CFR Part 136 Appendix B.

3.5 Raw Data

3.5.1 GC/HPLC Analyses

This section shall include legible copies of the raw data for the following:

- Environmental samples (arranged in sequential order by client sample number);
- Instrument calibrations; and
- QC analyses.

The raw data for both the primary and confirmation analyses are to be included. The raw data for each analysis shall include the following:

- Chromatograms, scaled is such a manner as to be easily evaluated. Label all analyte peaks, internal standards and surrogate standards with chemical names;
- Manual integrations, before and after;
- Area print-outs or quantitation reports;
- Sample extraction and clean-up logs;
- Instrument analysis logs for each instrument used; and
- Second column and/or GC/MS confirmation, as applicable.

3.5.2 GC/MS Analyses

This section shall include legible copies of the raw data for the following:

- Environmental samples (arranged in increasing EPA sample number order);
- Mass spectrometer tuning and mass calibration (BFB, DFTPP);
- Initial and continuing instrument calibrations;
- QC analyses;
- Sample extraction and clean-up logs; and
- Instrument analysis logs for each instrument used.

The raw data for each analysis shall include the following:

- Chromatograms, scaled is such a manner as to be easily evaluated. Label all analyte peaks, internal standards and surrogate standards with chemical names;
- Manual integrations, before and after;
- Enhanced spectra of target analytes and tentatively identified compounds (TICs), with the associated best-match spectra; and
- Quantitation reports.

Legible copies of the raw data shall be organized systematically, each page shall be numbered, and a table of contents must be included with each package. The raw data for compound identification and quantitation must be sufficient to verify each result presented in Sections 2.4. and 2.5.

4.0 INORGANIC ANALYSES

The following are requirements for inorganic analyses. Use those forms which are relevant and applicable. Certain require-ments are relevant to specific-method techniques, i.e., ICP inter-element correlation factors is relevant only to ICP.

The data package submitted for EPA data validation shall consist of the following six (6) sections:

- Case narrative;
- Chain-of-Custody documentation;

(o) Summary of results for environmental samples (including MDLs or quantitation limits);

(p) Analytical Results Table 1A (see attached example), hardcopy and electronic deliverable in Lotus 123 spreadsheet format;

- Summary of QA/QC results; and
- Raw data.

4.1 Case Narrative

The case narrative shall be written on laboratory letterhead and the release of data to the EPA will be authorized by the laboratory manager or his/her designee. The Case Narrative will consist of the following information, at a minimum:

- Sampler's sample identification and the corresponding laboratory identification;
- Parameters analyzed for each sample and the methodology used. When applicable, cite EPA method numbers;
- Information on whether the holding times were met or exceeded;
- Detailed description of all problems encountered;
- Discussion of any QA/QC sample results outside acceptance limits and possible reasons; and
- Observations regarding any occurrences which may affect sample integrity or data quality.

4.2 Chain-of-Custody Documentation

Original copies of Chain-of-Custody forms for each sample shall be submitted in the data package. The date of receipt and the observed sample condition at the time of receipt must be described on the Chain-of-Custody form. Copies of any internal laboratory tracking documents shall be included.

4.3 Summary of Environmental Sample Results (CLP Form I or equivalent)

The following information is to be included in the summary of sample results for each environmental sample (one sample per page). The summary form should follow the CLP format. (Examples will be provided upon request.) Other formats are acceptable provided that all necessary information is included, and the alternative format has been reviewed and pre-approved by the PO.

- **Form Title;**
- **Sampler's sample identification and the corresponding laboratory identification;**
- **Sample collection date;**
- **Sample matrix;**
- **Date of sample digestion and weight or volume of sample used for analysis/digestion, as applicable;**
- **Date and time of analysis;**
- **Identification of the instrument used for analysis;**
- **Instrument specifications;**
- **Dilution or concentration factor for the sample;**
- **Percent solids in the soil sample;**
- **Instrument detection limits (IDL), method detection limits (MDL), quantitation limits (QL), or reporting limits (RL);**
- **Dilution corrected analytical results, reported in ug/L or mg/Kg; and**
- **Definitions for any data qualifiers used.**

4.3.1 Include an Analytical Results Table 1A, in Lotus 123 spreadsheet format, with results and qualifiers for all samples analyzed in the SDG. Compounds from the target analyte list will be depicted in the first column. The subsequent set of columns, one set for each sample, will consist of results and associated laboratory qualifiers. (See attached example.) Also include as an electronic deliverable, the Lotus 123 spreadsheet on a 3 ½" diskette.

4.4 Summary of QA/QC Results
(Note: this Section applies to both Metals and Non-Metals)

The following QA/QC sample results must be presented on summary forms to facilitate data validation and data quality assessment activities. These summaries should follow the CLP format. (Examples will be provided upon request.) Other formats are acceptable provided that all necessary information is included and the alternative format has been reviewed and approved by the PO. These summaries must have all information outlines below, as applicable

4.4.1 Instrument Calibration (CLP Form IIA or equivalent)

The order for reporting of calibration verifications for each analyte must follow the chronological order in which the standards were analyzed.

- **Initial Calibration Information**
- **Initial Calibration Verification**

Report the source for the verification standards. Report the concentration for the true value, the found concentration, the % recovery, and the date and time of analysis.

- **Continuing Calibration Verification**

Report the source for the verification standards. Report the concentration for the true value, the concentration found, and the percent recovery. The date and time of analysis must also be reported.

Report results for low-level standards (CLP Form IIB or equivalent) used to verify instrument sensitivity that the reported detection limits can be achieved in the manner described for continuing calibration verification.

4.4.2 Method Blank Analysis (CLP Form III or equivalent)

Report analyte concentrations found in the initial calibration blanks (ICB), the continuing calibration blanks (CCB), and in the preparation blanks. The date and time of analysis must also be reported.

The order for reporting ICB and CCB results for each analyte must follow the chronological order in which the blanks were analyzed.

4.4.3 ICP Interference Check Sample (CLP Form IV or equivalent)

Identify the source for the interference check sample. Report the true value, the initial and final results and the calculated percent recovery, and the control limits for each analyte.

4.4.4 Precision and Accuracy

- **Matrix Spike (MS) analysis (CLP Form VA or equivalent)**

  Report the concentration of the spiked sample result, the sample result and the concentration of spiking solution added to the sample for each analyte. Calculate and report the %R and list the control limits. If MS and MSD are performed, include one form for each.

- **Post Digestion Spike (CLP Form V or equivalent)**

  In addition to matrix spikes, post digestion spikes are analyzed during furnace analysis. Report the concentration of the spiked sample result, the sample result, and the spiking solution added for each element when sample matrix conditions require post digestion spikes. Calculate and report the %R and list the control limits.

- **Laboratory Duplicate (LD) Analysis (CLP Form VI or equivalent)**

  Report the original concentration, duplicate concentration and RPD. List the control limits. If MS and MSD are performed, calculate RPD.

- **Laboratory Control Sample (LCS) (CLP Form VII or equivalent)**

  Identify the source for the laboratory control sample. Report the true LCS and the found LCS result for each element analyzed. Calculate and report the percent recovery and list the control limits.

4.4.5 Other QC Criteria, as applicable

- **Method of Standard Additions (MSA) (CLP Form VIII or equivalent)**

  This summary must be included when MSA analyses are required. Report the absorbance values with corresponding concentration values. Report the final analyte concentration and list the associated correlation coefficient.

- **Inductively Coupled Plasma (ICP) Serial Dilution (CLP Form IX or equivalent)**

  Report the initial and serial dilution results, the associated %D, and the control limits.

- **ICP Linear Ranges (CLP Form XII or equivalent)**

For each instrument and wavelength used, report the date on which the linear ranges were established, the integration time, and the upper limit concentration.

- ICP Inter-element Correction Factors

  For each instrument and wavelength used, report the date on which the correction factors were determined. List the inter-element correction factors for Al, Ca, Fe, Mg and any other interfering elements and the analytes to which they are applied.

- IDLs, etc. (CLP Form X or equivalent)

. MDL determination

  List the method detection limits for all analytes

  Method detection limits are determined by performing at least 7 analyses of standards for all analytes measured at 2-5 times the required detection limit concentrations. The method detection limits are calculated as 3.143 times the standard deviation of the measured values. Refer to 40 CFR Part 136, Appendix B.

4.5 Raw data

This section shall include legible copies of the raw data for the following:

- Environmental sample results (arranged in increasing EPA sample number order);
- Instrument calibrations; and
- QC sample analysis data for each run and batch.

The raw data for each analysis shall include the following:

- Instrument print-outs and quantitation reports for each instrument used;
- Copies of log book entries for analyses where there are no instrument printouts (i.e., titrations);
- Absorbance, titrimetric, or other measurements for wet chemical analysis;
- Sample preparation and digestion logs;
- Instrument analysis logs for each instrument used; and
- Percent solids in the soil samples (when applicable).

Legible copies of the raw data shall be organized systematically, and each page shall be numbered, and a table of contents must be included in each package. The raw data for compound identification and quantitation must be sufficient to verify each result presented in Sections 4.4 and 4.5.

5.0 OTHER ANALYTICAL METHODS, e.g. TO-14 and TO-15 for air analysis:

The full data package shall consist of information regarding SUMMA canister cleaning, pressurization, and certification in addition to the items shown above in Sections 3.1 through 3.5.

ATTACHMENT 2

DATA QUALITY INDICATOR TABLES, TARGET COMPOUND LISTS, TARGET ANALYTE LISTS AND CONTRACT REQUIRED QUANTITATION LIMITS

Attachment 2 - Data Quality Indicator Tables, Target Compound Lists, Target Analyte Lists and Contract Required Quantitation Limits

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1.0 General Information

(B) The permitted methods are specified in the Data Quality Indicator (DQI) tables located in Appendices A through D. The procedures outlined in each permitted method are to be followed, unless otherwise specified in the appropriate DQI table. Analytical methods with higher method detection limits may be used only if the sample concentration exceeds five times the documented detection limit of the method.

(C) Data Calculations and Reporting Units:

1.2.1 Report sample results in concentration units of micrograms per liter (µg/L) or milligrams per kilogram (mg/Kg), as appropriate. See individual DQI tables for the number of significant figures to report.

1.2.2 For rounding results, adhere to the following rules:

a) If the digit following those to be retained is less than 5, round down; or

b) If the digit following those to be retained is greater than 5, round up; or

c) If the digit following the last digit to be retained is 5, round down if the digit is even, and round up if the digit is odd.

1.2.3 Ensure that all records of analysis, dilutions and calculations are legible and sufficient to recalculate all sample concentrations and QC results. Include an example of an *actual* sample calculation in the data package.

1.3 All samples must initially be run undiluted (i.e., final product of the sample preparation procedure). When an analyte concentration exceeds the calibrated or linear range (as appropriate), reanalysis for that analyte(s) is required after appropriate dilution. The Contractor shall use the least dilution necessary to bring the analyte(s) within the valid analytical range (but not below the CRQL) and report the highest valid value for each analyte as measured from the undiluted and diluted analyses. Unless the Contractor can submit proof (i.e., raw data) that dilution was required to obtain valid results, both diluted and undiluted sample measurements must be contained in the raw data.

1.4 Complete Sample Delivery Group (SDG) files (a.k.a.: data packages) are due 7, 14 or 35 days, depending on the requested turnaround time, after receipt of the last sample in a SDG. See Section 4.2.2 in the Statement of Work for the definition of an SDG.

1.5 Report water sample results in concentration units of micrograms per liter (ug/L) or milligrams per liter (mg/L), as appropriate.

1.6 Report soil sample results on a dry-weight basis in concentration units of micrograms per kilogram (ug/Kg) or milligrams per kilogram (mg/Kg), as appropriate. Report percent solid and percent moisture to the nearest whole percentage point.

Appendix A Summary of Documentation Requirements - Organic Data

Section I. Case Narrative

Section II. Chain-of-Custody Documentation

1. Original Chain-of-Custody forms with ID numbers and laboratory receipt signatures
2. Copies of internal tracking documents, as applicable

Section III. Sample Analysis Results

(a) Environmental samples, with quantitation limits (include dilutions and re-analyses)
(b) Analytical Results Table 1A

Section IV. QC Summary Forms

1. Initial and continuing calibrations
2. Method blank results
3. Surrogate percent recoveries
4. Matrix spike/matrix spike duplicate (MS/MSD) or laboratory fortified blank/laboratory fortified blank duplicate (LFB/LFBD) percent recoveries (%R)
5. MS/MSD or LFB/LFBD relative percent differences (RPD)
6. Laboratory duplicate RPD, if applicable
7. Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) %R and RPD, if applicable
8. GC/MS Instrument Performance Check
9. Internal Standard Area and Retention Time Summary
10. Compound Identification and Retention Time Window Determination
11. Analytical Sequence
12. Method detection limits (MDLs)

Section V. Raw Data, chromatograms and area/quantitation reports

1. Environmental samples (include dilutions and re-analyses)
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3. Initial calibration
4. Continuing calibration
5. Method blanks
6. Surrogate recoveries
7. Matrix spike (MS) recoveries
8. Laboratory duplicate or matrix spike duplicate (MSD) relative percent difference
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10. Retention time windows
11. Percent moisture for soil samples
12. Sample extraction and clean-up logs
13. Instrument analysis log for each instrument used

Section VI. Electronic deliverable in Lotus 123 spreadsheet format

Appendix B Summary of Documentation Requirements - Inorganic Data

Section I. Case Narrative

Section II. Chain-of-Custody Documentation

1. Original Chain-of-Custody forms with laboratory ID numbers and sample receipt signatures.
2. Copies of internal tracking documents, as applicable

Section III. Sample Analysis Results

1. Environmental samples, with quantitation limits (include dilutions and re-analyses)
2. Analytical Results Table 1A

Section IV. QC Sample Result Summary Forms

1. Initial and continuing calibration verifications
2. Method blanks, initial and continuing calibration blanks, prep blanks
3. ICP interference check sample
4. Matrix spike (MS) percent recoveries
5. Post Digestion spike
6. Laboratory duplicate (LD) relative percent differences
7. Laboratory control sample (LCS) percent recoveries
8. Method of standard additions
9. ICP serial dilution
10. Instrument or method detection limits
11. ICP linear range
12. ICP Inter-element Correction factors

Section V. Raw Data - sequential measurement readout records for ICP, graphite furnace atomic absorption (AA), flame AA, cold vapor mercury, cyanide, and/or other inorganic analyses.

1. Environmental samples (including dilutions and reanalyses)
2. Initial and continuing calibration verifications
3. Continuing calibration and Preparation blanks
4. Matrix spikes
5. Post digest spikes
6. Method of standard additions, when applicable
7. Laboratory duplicate or matrix spike duplicates
8. ICP Serial Dilution
9. Laboratory control samples, when applicable
10. Percent solids for soil samples
11. Sample digestion and/or sample preparation logs
12. Instrument analysis log, for each instrument used

Section VI. Electronic deliverable in Lotus 123 spreadsheet format

HARDNESS, TOTAL (mg/L as CaCO3) by EPA Method 130.2

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Hardness, Total (mg/L as $CaCO_3$)	5.0 mg/L	Technical: 6 months from collection; Contract: 6 months from receipt at laboratory	HNO_3 to pH <2; Cool to 4 C ±2 C

Follow the procedure outlined in EPA method 130.2 for the analysis of samples for hardness.

Use sample aliquots containing not more than 25 mg CaCO3 to avoid large titration volumes. This is determined by performing practice runs.

Pretreat waste waters and highly polluted waters by digesting the sample as described in the procedure in Section 7.1.2 of EPA Method 130.2.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of EPA Method 130.2. Sample results are to be reported in the concentration unit of milligram per liter (mg/L) of CaCO3. The concentration result shall be reported to two significant figures if the result is less than 10 mg/L; and to three significant figures if the result is greater than or equal to 10 mg/L.

Table 2. Summary of Internal Quality Control Procedures for Hardness by EPA Method 130.2

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**

Titration Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
One set of QC reference samples (two concentration levels)	One per batch or SDG	± 15% of expected result	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

Check the normality of titrant each day.

Add inhibitors if the end point is not sharp. Excessive amounts of heavy metals interfere by causing fading or indistinct end points. To correct for interferences, refer to Section 7.4 of EPA Method 130.2.

TOTAL DISSOLVED SOLIDS (TDS) by EPA Method 160.1

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Total Dissolved Solids (TDS)	20 mg/L	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C

Follow the procedure outlined in EPA method 160.1 for the analysis of samples for TDS.

Weigh solid residue to a constant weight, defined as two consecutive weight measurements differing by less than 0.5 mg, or less than 4%, whichever is smaller.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of EPA Method 160.1.

Report sample results in concentration units of milligram per liter (mg/L) as total dissolved solids. Report TDS concentrations that are less than 100 mg/L to 2 significant figures, and TDS concentrations that are greater than or equal to 100 mg/L to 3 significant figures.

Table 2. Summary of Internal Quality Control Procedures for Total Dissolved Solids (TDS) by *EPA Method 160.1*

QC Element	Frequency	Acceptance Criteria	Corrective Action
Analytical Balance Check: Weights of 100 mg, 1 g, and 100 g	Daily	Difference < 0.5 mg	1. Identify and document problem 2. Verify before sample analysis
Method Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
One set (two concentration levels) mineral reference samples	One set per batch or SDG	± 15% from expected concentration	1. Terminate analysis 2. Identify, document, and correct the problem 3. Reanalyze all associated samples

Use sample aliquots of 100 mL. If the residue in a sample is greater than 200 mg, repeat the analysis using a smaller sample aliquot.

TOTAL SUSPENDED SOLIDS (TSS) by EPA Method 160.2

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Total Suspended Solids (TSS)

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Total Suspended Solids (TSS)	10 mg/L	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C

Follow the procedure outlined in EPA method 160.2 for the analysis of samples for TSS.

Weigh solid residue to a constant weight, defined as two consecutive weight measurements differing by less than 0.5 mg, or less than 4%, whichever is smaller.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of EPA Method 160.2.

Report sample results in concentration units of milligram per liter (mg/L) as total suspended solids. Report TSS concentrations that are less than 100 mg/L to 2 significant figures, and TSS concentrations that are greater than or equal to 100 mg/L to 3 significant figures.

Table 2. Summary of Internal Quality Control Procedures for Total Suspended Solids (TSS) by EPA Method 160.2

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Analytical Balance Check: Weights of 100 mg, 1 g, and 100 g	Daily	Difference < 0.5 mg	1. Identify and document problem 2. Verify before sample analysis
Method Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
One set (two concentration levels) mineral reference samples	One set per batch or SDG	± 15% from expected concentration	1. Terminate analysis 2. Identify, document, and correct the problem 3. Reanalyze all associated samples

Use sample aliquots of 100 mL. If the weight of captured residue is less than 1.0 mg, increase the sample volume (up to 200 mL) to provide at least 1.0 mg of residue and repeat the analysis.

N-HEXANE EXTRACTABLE MATERIAL (HEM; OIL AND GREASE) and SILICA GEL TREATED N-HEXANE EXTRACTABLE MATERIAL (SGT-HEM; NON-POLAR MATERIAL) by EPA Office of Water Method 1664A

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for HEM; Oil and Grease and SGT-Hem; Non-polar Material

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
N-Hexane Extractable Material (HEM); Oil and Grease	5 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	pH <2 with HCl or H_2SO4; Cool to 2 C ±2 C
Silica Gel Treated N-Hexane Extractable Material (SGT-HEM); Non-polar Material	5 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	pH <2 with HCl or H_2SO4; Cool to 2 C ±2 C

Data Calculations and Reporting Units:

Calculate HEM and SGT-HEM sample results using Equation 5 provided in Section 12.0 of Method 1664A.

Report water sample results in concentration units of milligrams per liter (mg/L) HEM and mg/L SGT-HEM. Report HEM and SGT-HEM concentrations that are less than 10 mg/L to 2 significant figures, and HEM and SGT-HEM concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Calibration Procedures for HEM; Oil and Grease and SGT-Hem; Non-polar Material by EPA Office of Water Method 1664A

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Calibrate Analytical Balance at 2 mg and 1000 mg using Class S weights	Daily	±10% at 2 mg (± 0.2 mg) ±0.5% at 1000 mg (± 5 mg)	1. Recalibrate balance and verify before sample analysis
Calibration Verification (CV) at 2 mg and 1000 mg	Daily, after sample analysis	±10% at 2 mg (± 0.2 mg) ±0.5% at 1000 mg (± 5 mg)	1. Recalibrate balance and verify before sample analysis 2. Reweigh the batch

Table 3. Summary of Internal Quality Control Procedures for HEM; Oil and Grease and SGT-Hem; Non-polar Material by Method 1664A

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Laboratory Method Blank (MB)	One per Batch or SDG	< CRDL	1. Halt analyis, eliminate source of contamination and weigh blank showing no evidence of contamination 2. All samples must be associated with an uncontaminated method blank
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)[a]	One per batch or SDG	± 25% from expected value	1. Flag associated data with an "N"
Ongoing Precision and Recovery (OPR) Standard [b, c]	One per batch or SDG	Within limits: Avg R ± 2s [d]	1. Identify and correct the problem. 2. Re-extract sample batch. 3. Repeat OPR

[a] Spike sample aliquot with the hexadecane/stearic acid spiking solution. Follow Section 9.3 of Method 1664A for Matrix Spike sample.

[b] Refer to Section 9.6 of Method 1664A.

[c] The OPR standard must be spiked with hexadecane/stearic acid solution prepared from a separate source than the solution used for matrix spikes.

[d] Plus or minus 2 standard (s) deviations of the average recovery (R).

Dilute and reanalyze samples with concentrations exceeding the range of the calibration curve. Results for such reanalyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.

CARBONATE, BICARBONATE, and TOTAL ALKALINITY by Standard Methods 2320

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Alkalinity

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Low-Level Alkalinity: High-Level Alkalinity:	2 mg/L 20 mg/L	Technical: 14 Days from collection; Contract: 12 Days from receipt at laboratory	Cool to 4 C ±2 C; Samples must be unfiltered

Data Calculations and Reporting Units:

Calculate the sample results according to Section 5 of Standard Methods 2320.

Report sample results in concentration units of milligram per liter (mg/L) as calcium carbonate ($CaCO_3$). Report $CaCO_3$ concentrations that are less than 10 mg/L to 2 significant figures, and $CaCO_3$ concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Internal Quality Control Procedures for Carbonate, Bicarbonate and Total Alkalinity by Standard Methods 2320

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >20 mg/L; ± CRDL for samples <20 mg/L	1. Flag associated data with an "*"
Mineral Reference Samples	One set (at two concentration levels, one low, one high) per batch or SDG	± 15% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

Standardize pH meter daily, using at least 2 buffers.
Standardize titrant whenever prepared or monthly, whichever comes first.

Do not use titrant volumes greater than 50 mL. Reanalyze any sample requiring more than 50 mL of titrant, selecting a smaller aliquot of sample, or performing the titration with a higher normality standard acid.

INORGANIC ANIONS by ION CHROMATOGRAPHY by EPA Method 300.0

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Inorganic Anions

Analytical Parameter	Contract Required Detection Limit (CRDL)	Technical and Contract Holding Times	Preservation

Nitrate-N (NO_3-N) Nitrite-N (NO_2-N) ortho-Phosphate-P (HPO_4-P)	0.10 mg/L 0.10 mg/L 1.0 mg/L	Technical: 48 hours from collection; Contract: 24 hours from receipt at laboratory	Cool to 4 C ±2 C
Bromide (Br) Chloride (Cl) Fluoride (F) Sulfate (SO_4)	1.0 mg/L 1.0 mg/L 0.10 mg/L 1.0 mg/L	Technical: 28 days from collection; Contract: 25 days from receipt at laboratory	Cool to 4 C ±2 C

Data Calculations and Reporting Units:

Calculate the sample results according to Section 12 of EPA Method 300.0.
Report sample results in concentration units of milligram per liter (mg/L) for bromide, chloride, fluoride, and sulfate. Report sample results in mg/L as nitrogen for nitrate and nitrite, and as phosphorous for orthophosphate. Report anion concentrations that are less than 10 mg/L to 2 significant figures, and anion concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Calibration Procedures for Inorganic Anions by EPA Method 300.0

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 3 points for each analyte) (ICAL) [a, b]	Initially; whenever required, due to failure of ICV or IPC	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Separate source from ICAL standards)	Daily, prior to sample analysis; immediately following ICAL	±10% from expected concentration	1. Reprep ICV and reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples
Instrument Performance Check (IPC)	Following ICV and before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good IPC
Retention time evaluation for IPC and ICV standards	Each analysis of IPC and ICV standards	±10% from expected retention times	1. Recalibrate and verify 2. Reanalyze samples back to last good IPC
Calibration Blank Verification (ICB, CCB)	After ICV and every IPC	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples
CRDL Verification Standard	After initial IPC/CCB	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify

[a] The ICAL low standard must be between the CRDL and 2X CRDL.
[b] Report the retention time window for each analyte. Determine retention time windows as ±10% of the mean retention time for each analyte in the calibration standards.

Table 3. Summary of Internal Quality Control Procedures for Inorganic Anions by EPA Method 300.0

QC Element	Frequency	Acceptance Criteria	Corrective Action
Laboratory Reagent Blank (LRB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Laboratory Fortified Matrix (LFM)	One per batch or SDG	± 25% from expected value [a]	1. Flag associated data with a "N"
Laboratory Fortified Blank (LFB)	One per batch or SDG	± 10% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

If resolution is inadequate or analyte identification is questionable, fortify the sample with an appropriate amount of standard and reanalyze.

AMMONIA as NITROGEN (NH_3-N) by EPA Method 350.1/350.3

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Ammonia-N

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Ammonia-N (NH_3-N)	0.10 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	H_2SO_4 to pH <2, Cool to 4 C ±2 C

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of EPA Method 350.1 or 350.3.

Report sample results for ammonia in concentration units of milligram per liter (mg/L) as nitrogen. Report NH_3-N concentrations that are less than 10 mg/L to 2 significant figures, and nitrogen concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Calibration Procedures for Ammonia-N by EPA Method 350.1/350.3

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points) (ICAL)	With each set of samples analyzed; Method 350.1: in order of decreasing concentration; Method 350.3: in order of increasing concentration 350.3.	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) (Separate source from ICAL standards)	Daily, prior to sample analysis, immediately following ICAL	± 10% from expected concentration	1. Reprep ICV and, reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples
CRDL Verification Standard (@ CRDL)	Daily, after ICV and before samples	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify
Continuing Calibration Verification (CCV)	Before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Calibration Blank Verification (ICB, CCB)	After ICV and CCVs	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples

Analyze calibration standards in order of decreasing concentration for the colorimetric procedure, highest to lowest. Analyze calibration standards in order of increasing concentration for the potentiometric procedure, lowest to highest. Prepare a standard curve with each set of samples analyzed.

Table 3. Summary of Internal Quality Control Procedures for Ammonia-N by EPA Method 350.1/350.3

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**

Method Blank (MB)[a]	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples 5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)	One per batch or SDG	± 25% from expected value [b]	1. Flag associated data with a "N"
Laboratory Control Sample (LCS)[a]	One per batch or SDG	± 20% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] The LCS and MB must be treated identically to the samples. If the environmental samples are preserved with sulfuric acid, the LCS and MB should be acidified with sulfuric acid. Similarly, if the environmental samples are filtered due to presence of suspended matter, the LCS and MB should be filtered also.

[b] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

NITROGEN, KJELDAHL, TOTAL by EPA Method 351.1/351.2/351.4

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Total Kjeldahl Nitrogen

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Total Kjeldahl-Nitrogen as (TKN-N)	0.10 mg/L	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	H_2SO_4 to pH <2, Cool to 4 C ±2 C

Data Calculations and Reporting Units:

Calculate the sample results according to Section 9 of EPA Method 351.1 or Section 8 of EPA Methods 351.2 and 351.4.

Report sample results for Total Kjeldahl-Nitrogen in concentration units of milligram per liter (mg/L) as nitrogen (TKN-N). Report Total Kjeldahl-N concentrations that are less than 10 mg/L to 2 significant figures, and Total Kjeldahl-N concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Calibration Procedures for Total Kjeldahl-Nitrogen by EPA Method 351.1/351.2/351.4

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points) (ICAL)[a]	With each set of samples analyzed	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) (Separate source from ICAL standards)	Daily, prior to sample analysis, immediately following ICAL	± 10% from expected concentration	1. Reprep ICV and, reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples
CRDL Verification Standard (@ CRDL)	Daily, after ICV and before samples	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify
Continuing Calibration Verification (CCV)	Before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Calibration Blank Verification (ICB, CCB)	After ICV and CCVs	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples

Prepare a standard curve with each set of samples analyzed.

[a] Method 351.1: Analyze calibration standards in order of increasing concentration for the colorimetric procedure, lowest to highest. Reanalyze any sample with a Total Kjeldahl-N concentration that is less than 10% of the sample run immediately prior to it.

Table 3. Summary of Internal Quality Control Procedures for Total Kjeldahl-Nitrogen by EPA Method 351.1/351.2/351.4

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)[a]	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all affected samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples 5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)[b]	One per batch or SDG	± 25% from expected value [c]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)[a]	One per batch or SDG	± 20% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] The MB and LCS must be treated identically to the samples. If the environmental samples are preserved with sulfuric acid, the LCS and MB should be acidified with sulfuric acid. Similarly, if the environmental samples are filtered due to presence of suspended matter, the LCS and MB should be filtered also.
[b] Spike the Matrix Spike sample prior to sample digestion.
[c] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

SULFIDE by EPA Method 376.1

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Sulfide

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Sulfide	1.0 mg/L	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	[a] 1.5 mL/L 2N zinc acetate and 6N NaOH to pH between 9 and 11; Cool to 4 C ±2 C

[a] Because of the preservation procedure, the entire sample must be used for analysis.

Follow the procedure outlined in EPA method 376.1 for the analysis of samples for sulfide. If a lower detection limit is necessary, the colorimetric method (EPA Method 376.2) must be used.

The volume of sample used for analysis must be accurately known and must be included in the calculation of sample results.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 7 of EPA Method 376.1. Sample results are to be reported in concentration units milligrams per liter (mg/L) to the nearest 0.1 mg/L (above 1 mg/L) or to 2 significant figures above 10 mg/L.

Table 2. Summary of Internal Quality Control Procedures for Sulfide by EPA Method 376.1

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Standardization titrations in duplicate [a]	Daily	Difference between titrations < 0.2 mL	1. Identify and document problem 2. Verify before sample analysis
Method Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"

[a] Analyze all standardization titrations in duplicate. Use the average of the duplicate results for calculations.

TOTAL ORGANIC CARBON in Water by EPA Method 415.1/415.2/SW-846 Method 9060

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Total Organic Carbon (TOC)

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Total Organic Carbon (TOC)	2.0 mg/L	UNPRESERVED Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C; protect from sunlight and atmospheric oxygen
Total Organic Carbon (TOC)	2.0 mg/L	PRESERVED Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	HCl[a] or H_2SO_4 to pH <2; Cool to 4 C ±2 C; protect from sunlight and atmospheric oxygen

[a] Preserve with HCl for EPA Method 415.1 and preserve with H_2S0_4 for EPA Method 415.2. (Use of HCl may damage the instrument used for EPA Method 415.2.)

Homogenize samples as necessary.

Analyze all samples in duplicate, including laboratory quality control samples such as matrix spike and laboratory control samples (LCS). Report the average value and relative percent difference.

Data Calculations and Reporting Units:

Calculate the sample results according to EPA Method 415.1, 415.2, or SW 9060.

Report sample results in concentration units of milligram per liter (mg/L) as organic carbon. Report organic carbon concentrations that are less than 10 mg/L to 2 significant figures, and organic carbon concentrations that are greater than or equal to 10 mg/L to 3 significant figures.

Table 2. Summary of Calibration Procedures for Total Organic Carbon (TOC) by EPA Method 415.1/415.2/SW-846 Method 9060

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**

Initial Calibration (minimum blank + 5 points) (ICAL)	Daily	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) (Separate source from ICAL standards)	Daily, prior to sample analysis, immediately following ICAL	± 10% from expected concentration	1. Reprep ICV and, reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples, if necessary
Carbonate-bicarbonate (CO_3-HCO_3) Standard	Daily, Following ICV and ICB	[a] ± 10% from expected concentration; [b] < CRDL	1. Reprep and reanalyze CO_3-HCO_3 standard 2. Identify and document problem 3. Recalibrate and reanalyze samples if necessary
Continuing Calibration Verification (CCV)	Before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Calibration Blank Verification (ICB, CCB)	After ICV and CCVs	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples
CRDL Verification Standard (@ CRDL)	After initial CCV	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify

[a] For instruments which subtract the inorganic concentration from the total to calculate the TOC, ± 10% from expected concentration;

[b] For instruments which acidify and sparge the inorganic carbon, a recovery of less than the CRDL is required

Table 3. Summary of Internal Quality Control Procedures for Total Organic Carbon (TOC) by EPA Method 415.1/415.2/SW-846 Method 9060

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per Batch or SDG (1 per 20 samples minimum)	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	All samples in the batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)	One per batch or SDG	± 25% from expected value [a]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)	One per batch or SDG	± 20% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

pH in Liquid and Soil by SW-846 Method 9040/9045

Table 1. Summary of Holding Times and Preservation for liquid and soil pH

Analytical Parameter	Technical and Contract Holding Times	Preservation
pH (Liquid and Soil)	Analyze pH immediately upon sample receipt by the laboratory	Cool to 4 C ±2 C

For soil samples:
In addition to the procedure outlined in Section 7.2 of SW-846 method 9045C,

For noncalcareous soils:

1. Weigh 20 grams of soil in a 50 mL beaker. Add 20 mL of Type II water. Stir the resulting suspension several times during the next 30 minutes.
2. Let the suspension to stand undisturbed for about 1 hour to allow most of the suspended clay to settle out

For calcareous soils:

1. Weigh 10 grams of soil in a 50 mL beaker. Add 20 mL of 0.01M $CaCl_2$. Stir the resulting suspension several times during the next 30 minutes.
2. Let the suspension to stand undisturbed for about 1 hour to allow most of the suspended clay to settle out.

Data Calculations and Reporting Units:

Read pH meter results directly in pH units and solution temperature in C.

Report pH results to the nearest 0.1 pH unit and temperature to the nearest C. Report the results for noncalcareous soils as “soil pH measured in water” and for calcareous soils, report the results as “soil pH measured in 0.01M $CaCl_2$".

Table 2. Summary of Calibration Procedures for pH by SW-846 Method 9040/9045

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Meter Standardization	Initially	Refer to manufacture's instructions	Refer to manufacture's instructions concerning standardization and electrode(s) care
Calibration	Daily, prior to sample analysis	A minimum of 2 primary or secondary standard buffers must be used; Buffers must bracket expected pH of sample; Buffers must be 3 or more pH units apart; Buffer readings must be within 0.05 pH units of buffer's true value	1. Allow buffer temperatures to reach equilibrium 2. Repeat measurement with successive volumes of fresh buffer until acceptance criteria are met 3. Replace electrode(s) (follow manufacture's instructions), if needed
Buffer pH Check	Check a calibration buffer solution after every 10 samples (minimum)	<±0.1 pH unit difference	1. Recalibrate meter and reanalyze samples

NOTE: Electrode(s) must be cleaned after each sample analysis by thoroughly rinsing and gently wiping.

Table 3. Summary of Internal Quality Control Procedures for pH by SW-846 Method 9040/9045

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Sample Temperatures	Every sample	<2 C difference from buffer	Refer to manufacture's instructions concerning the pH meter temperature compensating function
Duplicate Sample (DUP)	One per batch or SDG	<±0.1 pH unit difference	1. Allow sample temperatures to reach equilibrium 2. Perform buffer pH check (See Calibration Procedure) 3. Clean electrode (See Calibration Procedure Note)

TOTAL ORGANIC CARBON (TOC) in SOIL by SW-846 Method 9060

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Total Organic Carbon (TOC) in Soil

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Total Organic Carbon (TOC)	200 mg/Kg	Technical: 28 days from collection; Contract: 26 days from receipt at laboratory	Cool to 4 C ±2 C; protect from sunlight and atmospheric oxygen

Homogenize samples by shaking, stirring, and/or pulverizing using a blender.
Using a separate portion of the sample, analyze for percent solids.
Remove inorganic carbon by the addition of several drops of 1:1 nitric acid to a pH < 2. Dry samples in a drying oven to drive off CO_2. Allow 10 to 30 minutes drying time.

Analyze all samples in duplicate, including laboratory quality control samples such as matrix spike and laboratory control samples (LCS). Report the average value and relative percent difference.

Data Calculations and Reporting Units:

Calculate the sample results according to Section 8 of SW-846 Method 9060.

Report sample results in concentration units of milligram per kilogram (mg/Kg) of organic carbon on a dry weight basis. Calculate sample results according to the following formula:

$$A = (B \times 100{,}000) \div (C \times D)$$

Where A = concentration of TOC in mg/Kg (dry weight basis); B = TOC measured, in g; C = Sample size, in mg; D = % Solids

Report organic carbon concentrations that are less than 10 mg/Kg to 2 significant figures, and organic carbon concentrations that are greater than or equal to 10 mg/Kg to 3 significant figures.

Table 2. Summary of Calibration Procedures for Total Organic Carbon (TOC)

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points) (ICAL)	Daily	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) (Separate source from ICAL standards)	Daily, prior to sample analysis, immediately following ICAL	± 10% from expected concentration	1. Reprep ICV and, reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples, if necessary
Continuing Calibration Verification (CCV) [a]	Before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Calibration Blank Verification (ICB, CCB)	After ICV and CCVs	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples
CRDL Verification Standard (@ CRDL)	After initial CCV	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify

[a] The CCV must be at a different concentration than the ICV.

Use between 10 and 50 mg of soil sample for analysis. Reanalyze using a smaller sample size if the TOC concentration in a 10 mg sample exceeds the calibration range.

Table 3. Summary of Internal Quality Control Procedures for Total Organic Carbon (TOC)

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**

Method Blank (MB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	All samples in the batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)	One per batch or SDG	± 25% from expected value [a]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)	One per batch or SDG	± 20% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

Analyze all samples in duplicate, including MS, LCS, and blanks. Report the average and relative percent difference of the results for duplicate analysis.

PERCHLORATE in WATER by ION CHROMATOGRAPHY by Modified EPA Method 300.0

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation for Perchlorate

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times**	**Preservation**
Perchlorate	5.0 g/L	Technical: 28 days from collection; Contract: 21 days from receipt at laboratory	Cool to 4 C ±2 C

[a] EPA Method 300.0 modified for the analysis of perchlorate in water as described in the California Department of Health Services (DHS) method (Sanitation & Radiation Laboratories Branch; Determination of Perchlorate by Ion Chromatography, Rev. No. 0, June 3, 1997).

Data Calculations and Reporting Units:

Calculate the sample results according to Section 12 of EPA Method 300.0 (Revision 2.1, August 1993) or Section 12 of the California DHS method. Report sample results in the concentration unit of micrograms per liter (g/L). Report perchlorate concentrations which are 10 g/L to three significant figures and perchlorate concentrations which are <10 g/L to two significant figures.

Table 2. Summary of Calibration Procedures for Perchlorate by Modified EPA Method 300.0

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for perchlorate)(ICAL) [a, b]	Initially; monthly; or whenever required due to failure of IPC	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Separate source from ICAL standards)	Daily, prior to sample analysis; immediately following ICAL	±10% from expected concentration	1. Reprep ICV and reanalyze all associated samples 2. Identify and document problem 3. Recalibrate and reanalyze reprepped ICV and all associated samples
Instrument Performance Check (IPC) [c] (Separate source from ICAL standards)	Following the calibration and prior to sample analysis; after every 10 samples; and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good IPC
Retention time evaluation for IPC standard	Each analysis of IPC standard	±10% from expected retention time	1. Recalibrate and verify 2. Reanalyze samples back to last good IPC
Calibration Blank Verification (ICB, CCB)	After ICAL; every IPC; and end of the analytical sequence	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples
CRDL Verification Standard	After initial IPC/CCB	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify

[a] The low level standard should be at a concentration equal to the contract required detection limit (CRDL).

[b] Report the retention time window for each analyte. Determine retention time windows as ±10% of the mean retention time for each analyte in the calibration standards.

[c] The IPC standard solution should contain perchlorate at a concentration different from the concentration of perchlorate in the calibration standards.

Table 3. Summary of Internal Quality Control Procedures for Perchlorate by Modified EPA Method 300.0

QC Element	Frequency	Acceptance Criteria	Corrective Action
Laboratory Reagent Blank (LRB)	One per Batch or SDG	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Laboratory Fortified Matrix (LFM) [a]	One per batch or SDG	± 25% from expected value	1. Flag associated data with an "N"
Laboratory Fortified Blank (LFB)	One per batch or SDG	± 10% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

[a] If the LFM sample exceeds the calibration range, the sample must be diluted appropriately, re-spiked, and reanalyzed.

Perform confirmatory techniques, such as sample dilution and spiking, when the identification of a peak in the chromatogram is questionable. Spike the sample with an appropriate amount of the relevant standard and reanalyze.

Analyze a laboratory blank after the analysis of an unusually concentrated sample to check for contamination by carry-over. Any sample with perchlorate present at a concentration 2× the calibration range is considered an unusually concentrated sample.

Title 22 Metals

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Metals in water (except Mercury)	Technical: 180 days from date of collection; Contract: 35 days from sample receipt at laboratory	pH <2 (with nitric acid)
Metals in soil (except Mercury)	Technical: 180 days from date of collection; Contract: 35 days from sample receipt at laboratory	Cool to 4 C ±2 C
Mercury in water	Technical: 28 days from date of collection; Contract: 26 days from sample receipt at laboratory	pH <2 (with nitric acid)
Mercury in soil	Technical: 28 days from date of collection; Contract: 26 days from sample receipt at laboratory	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 1B.

Sample Preparation:

Water samples are to be prepared following the protocol presented in SW-846 Method 3010. Soil samples are to be prepared following the protocol presented in SW-846 Method 3050. Analyses to be performed by SW-846 Method 6010: Inductively Coupled Plasma (ICP); SW-846 Method 7000: Graphite Furnace Atomic Absorption(GFAA); and SW-846 Method 7470/7471: Mercury Analysis by CVAA;

Data Calculations and Reporting Units:

Calculate the sample results according to the protocol of the appropriate analytical method used.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Detection Limits, Title 22 Metals

COMPOUND	CAS No.	CRDL for Water (µg/L)	CRDL for Soil (mg/Kg)
Aluminum	7429-90-5	50	10.0
Antimony	7440-36-0	6	2.5
Arsenic	7440-38-2	2	1.0
Barium	7440-39-3	20	4.0
Beryllium	7440-41-7	1	0.25
Cadmium	7440-43-9	1	0.5
Chromium	7440-47-3	10	2.0
Cobalt	7440-48-4	20	4.0
Copper	7440-50-8	20	4.0
Lead	7439-92-1	5	1.0
Mercury	7439-97-6	0.2	0.1
Molybdenum	7439-97-6	20	4.0
Nickel	2023493	10	4.0
Selenium	7782-49-2	5	1.0
Silver	7440-22-4	20	4.0
Thallium	7440-28-0	1	1.0
Vanadium	7440-62-2	20	4.0
Zinc	7440-66-6	20	5.0

Table 2A. Summary of Calibration Procedures for Title 22 Metals by ICP, Title 22

Calibration Element	Frequency	Acceptance Criteria	Corrective Action

Initial Calibration (minimum blank + 1 calibration standard) (ICAL)	Initially, Daily; whenever required, due to failure of CCV	Acceptable ICV, CRDL, and ICB standards	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±10% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Before samples, after every 10 samples, and end of run	± 10% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRI)	After ICV, but before sample analysis	±35% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV
ICP Interference Check Sample (ICS)	Run at start and finish of daily run or twice per 8 hours	± 20% from true value concentration	1. Reprep and re-analyze standard 2. Re-calibrate, verify and re-analyze all associated samples

Table 2B. Summary of Calibration Procedures for Title 22 Metals by GFAA, Title 22

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 3 standards for each analyte) (ICAL) [a]	Initially, each analytical batch; whenever required, due to failure of CCV	r 0.995	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±10% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Following ICV and before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRA)	After ICV, but before sample analysis	± 35% from expected concentration	1. Reprep and re-analyze standard 2. Re-calibrate and verify

[a] The ICAL low standard should be run at the CRDL.

Table 2C. Summary of Calibration Procedures for Mercury by CVAA, Title 22

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 standards) (ICAL) [a]	Initially, each analytical batch; whenever required, due to failure of CCV	r 0.995	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±20% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Before Samples, after every 10 samples, and end of run	±20% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRA)	After ICV, but before sample analysis	± 35% from expected concentration	1. Reprep and re-analyze standard 2. Re-calibrate and verify

[a] The ICAL low standard must be at the CRDL.

Table 3. Summary of Internal Quality Control Procedures for Title 22 Metals by ICP, CVAA, and GFAA, Title 22 Metals

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per batch or SDG [a]	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all affected samples must be prepared again with another method blank and re-analyzed
Duplicate Sample (DUP)	One per batch or SDG [a]	**Waters:** RPD <± 20% for samples >5X CRDL; ± CRDL for samples <5X CRDL **Soils:** RPD <± 35% for samples >5X CRDL; ± 2xCRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike Sample (MS)	One per batch or SDG [a]	± 25% from expected value [b]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)	One per batch or SDG [a]	**Waters:** ± 20% from expected concentration **Soils:** within control limits of certified solid LCS or ± 20% from expected spike concentration	1. Terminate analysis and identify and document the problem 2. Re-analyze all associated samples

Table 3. (cont) Summary of Internal Quality Control Procedures for Title 22 Metals by ICP, CVAA, and GFAA, *Title 22 Metals*

QC Element	Frequency	Acceptance Criteria	Corrective Action
Serial Dilution Sample (5 X Dilution) (ICP only)	One per batch or SDG [a]	± 10% difference from original results for analytes greater than 50 X IDL	1. Flag associated data with a "E"
Duplicate Injections (GFAA only)	All samples	Duplicate results within ± 20% RPD (or CV)	1. Rerun sample once 2. Flag associated data with an "M" if acceptance criteria are not met after second run
Analytical Spike Sample (2 X CRDL) (GFAA only)	All samples	Spike recovery ± 15%	1. If spike recovery is <40%, dilute sample by a factor of 5 to 10 and run again. If recovery is still <40%, report data and flag with an "E" to indicate interference problems 2. If sample concentration is **<**50% of recovered spike value and spike recovery is >40% and <85% or >115%, report result down to IDL and flag result with a "W" 3. If sample concentration is **>**50% of recovered spike value and spike recovery is >40% and <85% or >115%, quantitate by MSA
Method of Standard Addition (GFAA only)	As determined by analytical spike recovery results	3 samples spiked at 50%, 100%, and 150% of sample concentration and r 0.995	1. Rerun samples only once 2. Flag associated data with a "+" if acceptance criteria are not met after second run

[a] Minimum requirement is the analysis of 1 QC sample per 20 samples.
[b] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

HEXAVALENT CHROMIUM in Soil and Water

Atomic Absorption, Chelation-Extraction, EPA Method 218.4
Colorimetric, SW-846 Method 7196A *

Table 1. Summary of Contract Required Detection Limits, Holding Times, and Preservation

Analytical Parameter	**Contract Required Detection Limit (CRDL)**	**Technical and Contract Holding Times** [a]	**Preservation**
Hexavalent Chromium (Cr^{+6})in Water Samples	20 g/L [b] 10 g/L [c]	Technical: 24 hours from collection; Contract: 12 hours from receipt at laboratory	Cool to 4 C ±2 C [e]
Cr^{+6} in Soil Samples [d]	2 mg/kg	Contract: 12 hours from receipt at laboratory	Cool to 4 C ±2 C

* If the colorimetric method is not suitable, EPA Method 218.4 may be used. If EPA Method 218.4 is designated for analysis, the diphenylcarbazide colorimetric procedure discussed in Section 2.3 of EPA Method 218.4 **may NOT** be used.

[a] Laboratories bidding on this analysis must be located within a 3 hour drive from the site of sample collection.

[b] 20 g/L CRDL for analysis by SW-846 Method 7196A

[c] 10 g/L CRDL for analysis by EPA Method 218.4

[d] Soil Samples: Follow EPA SW-846 Method 3060A (January 1995) for sample digestion.

[e] Determine initial pH of water samples.

Data Calculations and Reporting Units:

Calculate the sample results from the standard curve. Calculate soil sample results using the equation provided in Section 7.10.1 of Method 3060A.

Cr^{+6} concentrations that are less than 10 g/L or 10 mg/kg to 1 significant figure, and Cr^{+6} concentrations that are greater than or equal to 10 g/L or 10 mg/kg to 2 significant figures.

Table 2. Summary of Calibration Procedures for Hexavalent Chromium by EPA Methods 218.4/7196A

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b]	Initially; whenever required, due to failure of ICV or CCV	r 0.995	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Separate source from ICAL standards)	Daily, prior to sample analysis; immediately following ICAL	±10% from expected concentration	1. Identify and document problem 2. Reprep ICV and reanalyze all associated samples 3. Recalibrate and reanalyze reprepped ICV and all associated samples

Continuing Calibration Verification (CCV)	Following ICV and before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Identify and document the problem 3. Recalibrate, verify and reanalyze all associated samples with results less than 10 times the level of contamination in the blank.
CRDL Verification Standard	After initial CCV/CCB	± 20% from expected concentration	1. Reprep and reanalyze standard 2. Recalibrate and verify

[a] The ICAL standards for SW-846 Method 7196A must include standard concentrations at the CRDL (20 g/L) through 500 g/L. The ICAL standards for EPA Method 218.4 must include standard concentrations at the CRDL (10 g/L) through 250 g/L.

[b] A calibration curve must be prepared with each set of samples.

Table 3. Summary of Internal Quality Control Procedures for Hexavalent Chromium

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Laboratory Method Blank (MB)	One per Batch or SDG (1 per 20 samples minimum)	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all associated samples must be prepared again with another method blank and reanalyzed
Duplicate Sample (DUP)	One per batch or SDG (1 per 20 samples minimum)	RPD <20% for samples >5X CRDL; ± CRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike (MS)	One per batch or SDG (1 per 20 samples minimum)	± 25% from expected value	1. Flag associated data with an "N"

Laboratory Control Sample (LCS)	One per batch or SDG (1 per 20 samples minimum)	± 20% from expected concentration	1. Terminate analysis 2. Identify and document the problem 3. Reanalyze all associated samples

Metals (6010/7060a/7421/7740/7841)
Mercury (7470/7471A) and Cyanide (9010B/9012A/9014)

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Metals in water (except Mercury)	Technical: 180 days from date of collection; Contract: 35 days from sample receipt at laboratory	pH <2 (with nitric acid)
Metals in soil (except Mercury)	Technical: 180 days from date of collection; Contract: 35 days from sample receipt at laboratory	Cool to 4 C ±2 C
Mercury in water	Technical: 28 days from date of collection; Contract: 26 days from sample receipt at laboratory	pH <2 (with nitric acid)
Mercury in soil	Technical: 28 days from date of collection; Contract: 26 days from sample receipt at laboratory	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 1B.

Sample Preparation:

Water samples are to be prepared following the protocol presented in SW-846 Method 3010. Soil samples are to be prepared following the protocol presented in SW-846 Method 3050. Analyses to be performed by SW-846 Method 6010: Inductively Coupled Plasma (ICP); SW-846 Method 7000: Graphite Furnace Atomic Absorption(GFAA); and SW-846 Method 7470/7471: Mercury Analysis by CVAA;

Data Calculations and Reporting Units:

Calculate the sample results according to the protocol of the appropriate analytical method used.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Detection Limits, Metals, Mercury, and Cyanide

COMPOUND	**CRDL for Water (µg/L)**	**CRDL for Soil (mg/Kg)**
Aluminum	200	40.0
Antimony	60	12.0
Arsenic	10	2.0

Barium	200	40.0
Beryllium	5	1.00
Cadmium	5	1.0
Calcium	5000	1000.0
Chromium	10	2.0
Cobalt	50	10.0
Copper	25	5.0
Cyanide	10	2.0
Iron	100	20.0
Lead	3	0.6
Magnesium	5000	1000
Manganese	15	3
Mercury	0.2	0.04
Nickel	40	8.0
Potassium	5000	1000.0
Selenium	5	1.0
Silver	10	2.0
Sodium	5000	1000.0
Thallium	10	2.0
Vanadium	50	5.0
Zinc	20	4.0

Table 2A. Summary of Calibration Procedures for Metals by ICP

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 1 calibration standard) (ICAL)	Initially, Daily; whenever required, due to failure of CCV	Acceptable ICV, CRDL, and ICB standards	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±10% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Before samples, after every 10 samples, and end of run	± 10% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRI)	After ICV, but before sample analysis	±35% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV
ICP Interference Check Sample (ICS)	Run at start and finish of daily run or twice per 8 hours	± 20% from true value concentration	1. Reprep and re-analyze standard 2. Re-calibrate, verify and re-analyze all associated samples

Table 2B. Summary of Calibration Procedures for Metals by GFAA

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 3 standards for each analyte) (ICAL) [a]	Initially, each analytical batch; whenever required, due to failure of CCV	r 0.995	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±10% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Following ICV and before sample analysis; after every 10 samples and end of run	± 10% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRA)	After ICV, but before sample analysis	± 35% from expected concentration	1. Reprep and re-analyze standard 2. Re-calibrate and verify

[a] The ICAL low standard should be run at the CRDL.

Table 2C. Summary of Calibration Procedures for Mercury by CVAA

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 standards) (ICAL) [a]	Initially, each analytical batch; whenever required, due to failure of CCV	r 0.995	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Initial Calibration Verification (ICV) at midpoint of ICAL (Different source from ICAL standards)	Daily, immediately following ICAL and prior to sample analysis	±20% from expected concentration	1. Terminate analysis and identify and document problem 2. Reprep and re-analyze ICV and all associated samples 3. Re-calibrate and re-analyze reprepped ICV and all associated samples
Calibration Blank Verification (ICB, CCB)	After ICV and every CCV	< CRDL	1. Terminate analysis 2. Determine Source of contamination 3. Reprep ICB and CCB 4. Re-analyze all samples associated with a contaminated blank
Continuing Calibration Verification (CCV)	Before Samples, after every 10 samples, and end of run	±20% from expected concentration	1. Re-calibrate and verify 2. Re-analyze samples back to last acceptable CCV
Contract Required Detection Limit Verification Standard (CRA)	After ICV, but before sample analysis	± 35% from expected concentration	1. Reprep and re-analyze standard 2. Re-calibrate and verify

[a] The ICAL low standard must be at the CRDL.

Table 3. Summary of Internal Quality Control Procedures for Metals, Mercury and Cyanide

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per batch or SDG [a]	< CRDL	1. If lowest sample concentration is more than 10X the blank conc., no action 2. If samples are non-detected, no action 3. If detected sample concentrations are less than 10X blank conc., all affected samples must be prepared again with another method blank and re-analyzed
Duplicate Sample (DUP)	One per batch or SDG [a]	**Waters:** RPD <± 20% for samples >5X CRDL; ± CRDL for samples <5X CRDL **Soils:** RPD <± 35% for samples >5X CRDL; ± 2xCRDL for samples <5X CRDL	1. Flag associated data with an "*"
Matrix Spike Sample (MS)	One per batch or SDG [a]	± 25% from expected value [b]	1. Flag associated data with an "N"
Laboratory Control Sample (LCS)	One per batch or SDG [a]	**Waters:** ± 20% from expected concentration **Soils:** within control limits of certified solid LCS or ± 20% from expected spike concentration	1. Terminate analysis and identify and document the problem 2. Re-analyze all associated samples

Table 3. (cont) Summary of Internal Quality Control Procedures for Metals, Mercury and Cyanide

QC Element	Frequency	Acceptance Criteria	Corrective Action
Serial Dilution Sample (5 X Dilution) (ICP only)	One per batch or SDG [a]	± 10% difference from original results for analytes greater than 50 X IDL	1. Flag associated data with a "E"
Duplicate Injections (GFAA only)	All samples	Duplicate results within ± 20% RPD (or CV)	1. Rerun sample once 2. Flag associated data with an "M" if acceptance criteria are not met after second run
Analytical Spike Sample (2 X CRDL) (GFAA only)	All samples	Spike recovery ± 15%	1. If spike recovery is <40%, dilute sample by a factor of 5 to 10 and run again. If recovery is still <40%, report data and flag with an "E" to indicate interference problems 2. If sample concentration is **<**50% of recovered spike value and spike recovery is >40% and <85% or >115%, report result down to IDL and flag result with a "W" 3. If sample concentration is **>**50% of recovered spike value and spike recovery is >40% and <85% or >115%, quantitate by MSA
Method of Standard Addition (GFAA only)	As determined by analytical spike recovery results	3 samples spiked at 50%, 100%, and 150% of sample concentration and r 0.995	1. Rerun samples only once 2. Flag associated data with a "+" if acceptance criteria are not met after second run

[a] Minimum requirement is the analysis of 1 QC sample per 20 samples.
[b] An exception to this rule is granted in situations where the sample concentration exceeds the spike concentration by a factor of 4. In such an event, the data shall be reported unflagged.

2-DIBROMOETHANE (EDB) and 1,2-DIBROMO-3-CHLOROPROPANE (DBCP) IN WATER BY MICROEXTRACTION AND GAS CHROMATOGRAPHY by EPA Method 504.1

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter	Technical and Contract Holding Times	Preservation
EDB and DBCP	Technical: 28 days from collection to extraction and analysis; Contract: 26 days from receipt at laboratory to extraction and analysis	Sodium thiosulfate; Cool to 4 C ±2 C

Perform weekly MDL checks according to Section 9.4 of Method 504.1 and analyze a sample from an external source quarterly according to Section 9.5 of Method 504.1. Document outliers in the case narrative.

Second column confirmation is required for all positive results. Confirmation must be performed on a column of a phase different from that used for quantitation. Confirmation analyses must meet all calibration criteria specified in Table 2 and blank acceptance criteria specified in Table 3.

Data Calculations and Reporting Units:

Calculate the sample results using the average calibration factors from the ICAL or from the linear regression curve.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits

Compound	CAS Number	CRQL (µg/L)
1,2-Dibromoethane (EDB)	106-93-4	0.05
1,2-dibromo-3-chloropropane (DBCP)	96-12-8	0.05

Table 2. Summary of Calibration Procedures for 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP) by EPA Method 504.1

Calibration Element	Frequency	Acceptance Criteria	Corrective Action

Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%; or Linear Regression with a correlation coefficient (r) 0.99	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL (Separate source from ICAL standards)	Beginning of each 12-hour time period, after every 10 samples, and end of run	%D between between nominal and calculated amount CF for each compound must be <±15%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Retention time evaluation for CCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

[c] ICAL and continuing CAL standards must contain all surrogate compounds and target analytes listed in Table 1B.

Table 3. Summary of Internal Quality Control Procedures for 1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-Chloropropane (DBCP) by EPA Method 504.1

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	One per Batch or SDG per analytical instrument	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate Spike	Every standard, sample and method blank at 10 times CRQL	65-125% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries 2. If re-analysis does not solve the problem, re-extract and re-analyze
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	75-115% of expected value; 15 RPD between MS and MSD	1. Report in Case Narrative
Laboratory Control Sample (LCS) [a]	One per batch or SDG	60-140% of expected value	1. Re-extract and re-analyze the LCS and all samples associated with the non-compliant LCS

[a] Spike each target compound into the LFB at a concentration of 0.25 g/L.

TOTAL PETROLEUM HYDROCARBONS (TPH) as Gasoline and Diesel by SW-846 Method 8015B

Table 1A. Summary of Contract Required Quantitation Limits, Holding Times, and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Total Petroleum Hydrocarbons (TPH) as Gasoline in Water Samples	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C
TPH as Gasoline in Water Samples	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	HCl or H_2SO_4 to pH<2; Cool to 4 C ±2 C
TPH as Gasoline in Soil Samples	Technical: 48 hours Contract: 48 hours	Cool to 4 C ±2 C; sealed zero headspace containers; freezing can extend the holding time [b, c]
TPH as Gasoline in Soil Samples	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	Preserved samples: in methanol [d] or sodium bisulfate [e]
TPH as Diesel in Water Samples	Technical to Extraction: 14 days from collection; Contract to Extraction: 10 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C; HCl or H_2SO_4 to pH<2 [f]
TPH as Diesel in Soil Samples	Technical to Extraction: 14 days from collection; Contract to Extraction: 10 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 1B.

[b] Freezing the sample can extend the holding time; however, 48 hours unfrozen holding time will be considered cumulative.

[c] Use Method 5021 for headspace analysis.

[d] Use Method 5030 for purge and trap.

[e] Use Method 5035 for purge and trap.

[f] Diesel analysis does not require acidification; however, acidified samples can be analyzed for diesel.

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.7.2 of Method 8015B and 7.4.2 and 7.8.1 of SW-846 Method 8000A.

TABLE 1B. Target Compound List and Contract Required Detection Limits (CRQL)

Compound	CRQL Water (mg/L)	CRQL Soil (mg/kg)
Gasoline - Purge and Trap	0.5	10
Gasoline - Headspace	5	5
Diesel	0.5	10

Table 2. Summary of Calibration Procedures for Total Petroleum Hydrocarbons (TPH) as Gasoline and Diesel by SW-846 Method 8015B

Calibration Element	Frequency	Acceptance Criteria	Corrective Action
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%; or, if using a linear calibration curve, a correlation coefficient (r) of 0.99 for each compound	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV)at midpoint of ICAL	Beginning of each 12 hour time period, after every 10 samples and end of run	%D between calculated amount and nominal amount within ±25%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

Retention time evaluation CCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for surrogate, See footnote [c] for GRO and DRO	1. Re-calibrate and verify 2. Re-analyze samples back to last good IPC

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] Gasoline Range Organics (GRO): C_6-C_{10}; Diesel Range Organics (DRO): C_{10}-C_{28}

[c] Establish and report retention time (RT) windows for GRO and DRO as described in Section 7.4 of Method 8015B and 7.6 of Method 8000B. Calculate RT windows for GRO and DRO based on the lower limit of the RT window for the first eluting component and the upper limit of the RT window for the last eluting component. Determine RT windows for surrogate compounds as ±3 x the standard deviation (SD) of the average ICAL RT for each analyte.

Table 3. Summary of Internal Quality Control Procedures for Total Petroleum Hydrocarbons (TPH) as Gasoline and Diesel by SW-846 Method 8015B

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	Gasoline: One per each 12 hour time period and after unusually concentrated samples Diesel: One per Batch or SDG and for each instrument used	< CRQL for each compound	1. Investigate source of contamination and document corrective action measures 2. Re-extract and re-analyze all samples processed with a method blank that is out-of-control
Surrogate Spike [a]	Every sample and MB at midpoint of calibration range	Water Samples: 75-125% of expected value Soil Samples: 60-125% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries
Matrix Sike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	65-135% of expected value; 30 RPD between MS and MSD	1. Report in case narrative
Laboratory Control Sample (LCS)	Gasoline: one each 12-hour period; Diesel: one per Batch or SDG	80-120% of expected value	1. Re-extract and re-analyze all samples processed with out-of-control LCS

[a] Surrogates for GRO: 4-bromofluorobenzene and 1,1,1-trifluorotoluene;
Surrogate for DRO: hexacosane or ortho-terphenyl

HALOGENATED AND AROMATIC VOLATILE ORGANIC COMPOUNDS (VOCs) BY GAS CHROMATOGRAPHY SW-846 Methods 8010A/8020A/8021A

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Volatile Organic Compounds (VOCs) in Water	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C
VOCs in Water	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	HCl to pH <2; Cool to 4 C ±2 C
VOCs in Soil	Technical: 48 hours Contract: 48 hours	Cool to 4 C ±2 C; sealed zero headspace containers; freezing can extend the holding time [b]
VOCs in Soil	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	Preserved samples: in methanol [c] or sodium bisulfate [d]

[a] Individual target compounds are listed in Tables 1B and 1C.

[b] Freezing the sample can extend the holding time; however, 48 hours unfrozen holding time will be considered cumulative.

[c] Use Method 5030 for purge and trap.

[d] Use Method 5035 for purge and trap.

pH of each sample must be recorded and reported with sample results.

Table 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for Halogenated Volatile Organic Compounds

SW-846 Method 8010A or 8021A

Compound	**CAS Number**	**CRQL (g/L or g/kg)**
Benzyl chloride	100-44-7	1
Bromobenzene	108-86-1	1
Bromodichloromethane	75-27-4	1
Bromoform	75-25-2	1
Bromomethane	74-83-9	1
Carbon tetrachloride	56-23-5	1
Chloroethane	75-00-3	1
2-Chloroethylvinylether	110-75-8	1
Chloroform	67-66-3	1
Chloromethane	74-87-3	1
Dibromochloromethane	124-48-1	1
Dibromomethane	74-95-3	1
Dichlorodifluoromethane	75-71-8	1
1,1-Dichloroethane	75-34-3	1
1,2-Dichloroethane	107-06-2	1
1,1-Dichloroethene	75-35-4	1

trans-1,2-Dichloroethene	156-60-5	1

1,2-Dichloropropane	78-87-5	1
cis-1,3-Dichloropropene	10061-01-5	1
trans-1,3-Dichloropropene	10061-02-6	1
Methylene chloride	75-09-2	5
1,1,2,2-Tetrachloroethane	79-34-5	1
1,1,1,2-Tetrachloroethane	630-20-6	1
Tetrachloroethene	127-18-4	1
1,1,1-Trichloroethane	71-55-6	1
1,1,2-Trichloroethane	79-00-5	1
Trichloroethene	79-01-6	1
Trichlorofluoromethane	75-69-4	1
1,2,3-Trichloropropane	96-18-4	1
Vinyl chloride	75-01-4	1
Additional Compounds:		
1,2-Dibromo-3-chloropropane	96-12-8	1
1,2-Dibromoethane	106-93-4	1
1,3-Dichloropropane	142-28-9	1
Dichlorofluoromethane	75-43-4	1

Table 1C. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for *Aromatic Volatile Organic Compounds*

SW-846 Method 8020A or 8021A

Compound	**CAS Number**	**CRQL (g/L or g/kg)**

Benzene	71-43-2	1
Chlorobenzene	108-90-7	1
1,2-Dichlorobenzene	95-50-1	1
1,3-Dichlorobenzene	541-73-1	1
1,4-Dichlorobenzene	106-46-7	1
Ethylbenzene	100-41-4	1
Toluene	108-88-3	1
Xylenes (Total)	1330-20-7	1

Data Calculations and Reporting Units:

Calculate the calibration factors (CFs) and the concentration of individual analytes according to the equations specified in Sections 7.4.2 and 7.10.1, respectively, of Method 8000B.

Table 2. Summary of Calibration Procedures for Halogenated and Aromatic Volatile Organic Compounds by SW-846 Methods 8010A/8020A/8021A

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL)[a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 30%; or, correlation coefficient (r) of linear regression 0.99	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV)	Daily, every 12-hour, every ten samples, and end of run	%D between CF of CCV and avg CFs from ICAL <±25%	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
Retention time evaluation of CCV standards	Each analysis of CCV standard	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL and continuing CAL standards must contain all target analytes listed in Table 1B.

[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

Table 3. Summary of Internal Quality Control Procedures for Halogenated and Aromatic Volatile Organic Compounds by SW-846 Methods 8010A/8020A/8021A

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	Each 12-hour time period, minimum of one per SDG	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Reanalyze all samples processed with a blank that is out of control.
Instrument Blank	After any sample which contains a target compound concentration >50 ppb	< CRQL for each compound	1. Investigate the source of the problem and document. 2. Acceptance criterion must be met before proceeding with further analysis, in order to demonstrate that there is no analyte carryover.
Surrogate Spikes [a]	Every sample, standard and method blank	Water Sample: 75-125% of expected value Soil Sample: 65-135% of expected value	1. Reanalyze all samples with non-compliant surrogate recoveries
Matrix Spike and Matrix Spike Duplicate (MS/MSD) [b]	One MS/MSD set per batch or SDG	Water Sample: 75-125% of expected value; Soil Sample: 65-135% of expected value; 30% RPD between MS and MSD	1. Report in case narrative

[a] Surrogates: Halogenated compounds - 50 ng of one of the following three compounds: bromochlormethane, 2-bromo-1-chloropropane, or 1,4-dichlorobutane.

Aromatic compounds - 50 ng of one of the following two compounds: 1,1,1-trifluorotoluene and 4-bromofluorobenzene (BFB).

[b] Spike MS/MSD with 10 ppb of the following halogenated and aromatic VOCs: 1,1-dichloroethene, trichloroethene, chlorobenzene, toluene, and benzene.

Second column confirmation is required for all positive results. Confirmation must be performed on a column of a phase different from that used for quantitation. Confirmation analyses must meet all calibration criteria specified in Table 2 and blank acceptance criteria specified in Table 3.

PHENOLS BY GAS CHROMATOGRAPHY by SW-846 Method 8040

Table 1A. Summary of Holding Times and Preservation for Phenols by Gas Chromatography

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Phenols in Water	Technical to Extraction: 7 days from collection; Contract to Extraction: 5 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C
Phenols in Soil	Technical to Extraction: 14 days from collection; Contract to Extraction: 10 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Target Compound List is provided in Table 1B

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.4.10 of Method 8040A.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for Phenols, SW-846 Method 8040

Compound	**CAS Number**	**CRQL (µg/L)** [a]	**CRQL (µg/Kg)** [a, b]
4-Chloro-3-methylphenol	59-50-7	2	1340
2-Chlorophenol	95-57-8	0.6	400
2,4-Dichlorophenol	120-83-2	0.7	470
2,4-Dimethylphenol	105-67-9	0.6	400
2-Nitrophenol	50-32-8	0.8	540
4-Nitrophenol	88-75-5	0.7	470
Pentachlorophenol	87-86-5	0.6	400
Phenol	108-95-2	2	1340
2,4,6-Trichlorophenol	88-06-2	0.6	400

[a] These quantitation limits were attained using an electron capture detector (ECD) on samples prepared as pentafluorobenzylbromide (PFB) derivatives.

[b] The soil quantitation limits were calculated using the formula provided in Table 2 of Method 8040A, including extraction by sonication with gel permeation chromatography (GPC) cleanup.

Table 2. Summary of Calibration Procedures for Phenols by SW-846 Method 8040

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL (Separate source from ICAL standards)	Beginning of each 12-hour time period, after every 10 samples and end of run	%D between CF for CCV and avg CF for ICAL <±15%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Retention time evaluation for CCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

[c] ICAL and continuing CAL standards must contain all surrogate compounds and target analytes listed in Table 1B.

Table 3. Summary of Internal Quality Control Procedures for Phenols by SW-846 Method 8040

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	One per Batch or SDG per analytical instrument	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate Spike	Every standard, sample and method blank at 10 times CRQL	65-135% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries 2. If re-analysis does not solve the problem, re-extract and re-analyze
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	75-125% of expected value; 30 RPD between MS and MSD	1. Report in Case Narrative

Second column confirmation is required for all positive results. Confirmation must be performed on a column of a phase different from that used for quantitation. Confirmation analyses must meet all calibration criteria specified in Table 2 and blank acceptance criteria specified in Table 3.

ORGANOCHLORINE PESTICIDES AND POLYCHLORINATED BIPHENYLS (PCBs) by SW-846 Method 8081/8080

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) in Water Samples	Technical for Extraction: 7 days from collection; Contract for Extraction: 5 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C
Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) in Soil Samples	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 1B.

Data Calculations and Reporting Units:

Calculate the calibration factors (CF) of single component pesticides according to Section 7.4.2 of SW-846 Method 8000A. Calculate sample results using the analyte CFs from the midpoint standard of the associated initial calibration curve. Perform sample quantitation for multiple components pesticides according to Section 7.6 of SW-846 Method 8080A or 8081.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits (CRQL) by SW-846 Method 8081/8080

Compound	**CAS Number**	**CRQL Water (µg/L)**	**CRQL Soil (µg/kg)**
alpha-BHC	319-84-6	0.05	2
beta-BHC	319-85-7	0.05	2
delta-BHC	319-86-8	0.05	2
gamma-BHC (Lindane)	58-89-9	0.05	2
Heptachlor	76-44-8	0.05	2
Aldrin	309-00-2	0.05	2
Heptachlor epoxide	1024-57-3	0.05	2
Endosulfan I	959-98-8	0.05	2
Dieldrin	60-57-1	0.1	3
4,4'-DDE	72-55-9	0.1	3
Endrin	72-20-8	0.1	3
Endosulfan II	33213-65-9	0.1	3
4,4'-DDD	72-54-8	0.1	3
Endosulfan sulfate	376754	0.1	3
4,4'-DDT	50-29-3	0.1	3
Methoxychlor	72-43-5	0.5	17
Endrin ketone	53494-70-5	0.1	3

Endrin aldehyde	7421-93-4	0.1	3
alpha-Chlordane	5103-71-9	0.05	2
gamma-Chlordane	5103-74-2	0.05	2
Toxaphene	8001-35-2	5	170
Aroclor-1016	3935426	1	33
Aroclor-1221	11104-28-2	2	67
Aroclor-1232	11141-16-5	1	33
Aroclor-1242	53469-21-9	1	33
Aroclor-1248	12672-29-6	1	33
Aroclor-1254	11097-69-1	1	33
Aroclor-1260	11096-82-5	1	3

Table 2. Summary of Calibration Procedures for Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) by SW-846 Method 8081/8080

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 3 points for each analyte) (ICAL) [a,b,c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20% (30% for Surrogate compounds)	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL	Beginning of each day, after every 10 samples, and end of run	%D between CF of CCV and avg CFs from ICAL 25%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Endrin and 4,4'-DDT Breakdown	Beginning and end of analytical sequence	20% each or 30% combined	1. Investigate source of the problem and document 2. If either Endrin, 4,4'-DDT, or their breakdown products were detected, re-analyze the samples

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL Prepare initial calibration individual standard mixtures A and B (IND A and IND B) containing the single component pesticides specified in Table 9 of SW-846 Method 8081 at three concentration levels. For multiple response pesticides, including toxaphene and Aroclors (except 1016 and 1260), prepare separate initial calibration standards at the following concentration levels: Aroclors (except 1221)at 100 ng/mL; Aroclor-1221 at 200 ng/mL; and toxaphene at 500 ng/mL. Aroclor-1016 and Aroclor-1260 may be combined into a single standard solution. Spike all calibration standards with the surrogate compounds discussed in Table 3 at a concentration of 20 ng/mL.

[c] Report the retention time window for each analyte. For multiple component pesticides, calculate the retention time window for 5 major peaks from the initial calibration standard analysis.

Determine retention time windows for both single and multiple component pesticides using the following guidelines:

Column Type	Retention Time Window in Minutes
Packed Column	± 2%
Mega bore or wide bore capillary column	±0.05 for tetrachloro-m-xylene through Aldrin ±0.07 for compounds which elute after Aldrin

±0.1 for decachlorobiphenyl

Table 3. Summary of Internal Quality Control Procedures for Organochlorine Pesticides and Polychlorinated Biphenyls (PCBs) by SW-846 Method 8081/8080

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	One per Batch or SDG	< CRQL for each compound	1. Investigate source of contamination and document 2. Re-extract and re-analyze all samples processed with a non-compliant method blank
Surrogate [a]	Every standard, sample, method blank and QC sample at 10 times CRQL	60-150% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries
Matrix Spike and Matrix Spike Duplicate (MS/MSD)[b]	One MS/MSD set per batch or SDG	50-135% of expected value; 30 RPD between MS and MSD	1. Address in narrative

[a] Spike each standard, sample, and blank with 1mL of a solution containing 0.2 g/mL each of tetrachloro-m-xylene and decachlorobiphenyl

[b] Spike MS/MSD samples with 1mL of a solution containing the following compounds and levels:

Target compound	Concentration (g/mL)	Target Compound	Concentration (g/mL)
ã-BHC	0.5	Heptachlor	0.5
4,4'-DDT	1.0	Aldrin	0.5
Endrin	1.0	Dieldrin	1.0

Second column confirmation is required for all positive results. Perform confirmation analyses on a column of a phase different from that used for quantitation. Confirmation analyses must meet all instrument calibration criteria and blank acceptance criteria specified in Table 2, above.

ORGANOPHOSPHORUS PESTICIDES by SW-846 Method 8141A

Table 1A. Summary of Holding Times and Preservation for Organophosphorus Pesticides

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Organophosphorus Pesticides in Water	Technical for Extraction: 7 days from collection; Contract for Extraction: 5 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C
Organophosphorus Pesticides in Soil	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Target Compound List is provided in Table 1B

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.4.2 and 7.8.1 of SW-846 Method 8000A.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for Organophosphorus Pesticides

Compound	**CAS Number**	**CRQL Water (µg/L)**	**CRQL Soil (µg/Kg)**
Azinphos methyl	86-50-0	1.0	50.0
Bolstar (Sulprofos)	35400-43-2	0.7	35.0
Chlorpyrifos	2921-88-2	0.7	50.0
Coumaphos	56-72-4	2.0	100.0
Demeton, O,S	8065-48-3	1.2	60.0
Diazinon	333-41-5	2.0	100.0
Dichlorvos	62-73-7	8.0	400.0
Dimethoate	60-51-5	2.6	130.0
Disulfoton	298-04-4	0.7	35.0
EPN	2104-64-5	0.4	20
Ethoprop	13194-48-4	2.0	100.0
Fensulfothion	115-90-2	0.8	40.0
Fenthion	55-38-9	0.8	50.0
Malathion	121-75-5	1.1	55.0
Merphos	150-50-5	2.0	100.0
Mevinphos	7786-34-7	5.0	250.0
Monocrotophos	6923-22-4	ND	ND
Naled	300-76-5	5.0	250.0

Parathion-ethyl	56-38-2	0.6	30.0
Parathion-methyl	298-00-0	1.2	60.0
Phorate	298-02-2	0.4	20.0
Ronnel	299-84-3	0.7	35.0
Sulfotep	3689-24-5	0.7	35.0
TEPP	21646-99-1	8.0	400.0
Stirophos (Tetrachlorovinsphos)	22248-79-9	8.0	400.0
Tokuthion (Protothiofos)	34643-46-4	0.7	55.0
Trichloronate	327-98-0	8.0	400.0

ND - Not Determined

Table 2. Summary of Calibration Procedures for Organophosphorus Pesticides by SW-846 Method 8141A by SW-846 Method 8141A

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%;	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL (Separate source from ICAL standards)	Following ICV and before sample analysis; after every 10 samples and end of run	%D between CF of CCV and avg CFs from ICAL 15%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Retention time evaluation for CCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

[c] ICAL and continuing CAL standards must contain all target analytes listed in Table 1B.

Table 3. Summary of Internal Quality Control Procedures for Organophosphorus Pesticides by SW-846 Method 8141A

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	One per Batch or SDG	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate Spike	Every standard, sample and method blank at 10 times CRQL	Water: 75-125% of expected value Soil: 65-135% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG containing a minimum of 5 of the analytes chosen from Table 1B	65-135% of expected value; 30 RPD between MS and MSD	1. Address in Case Narrative

Second column confirmation is required for all positive results. Confirmation must be performed on a column of a phase different from that used for quantitation. Confirmation analyses must meet all calibration criteria specified in Table 2 and blank acceptance criteria specified in Table 3.

CHLORINATED HERBICIDES by SW-846 Method 8151

Table 1A. Summary of Holding Times and Preservation for Chlorinated Herbicides

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Chlorinated Herbicides in Water	Technical to Extraction: 7 days from collection; Contract to Extraction: 5 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C
Chlorinated Herbicides in Soil	Technical to Extraction: 14 days from collection; Contract to Extraction: 10 days from receipt at laboratory Technical and Contract to Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Target Compound List is provided in Table 1B

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.4.2 and 7.8.1 of SW-846 Method 8000A.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for Chlorinated Herbicides by SW-846 Method 8151

Compound	**CAS Number**	**CRQL Water (µg/L)**	**CRQL Soil (µg/Kg)**
2,4-D	94-75-7	1	33
2,4-DB	94-82-6	1.0	33
2,4,5-T	93-76-5	1.0	33
2,4,5-TP (Silvex)	93-72-1	1	33
Dalapon	75-99-0	1.0	33
Dicamba	1918-00-9	1.0	33
Dichlorprop	120-36-5	1.0	33
Dinoseb	88-85-7	1.0	33
MCPP	93-65-2	500	17000
MCPA	94-74-6	500	17000

Table 2. Summary of Calibration Procedures for Chlorinated Herbicides by SW-846 Method 8151

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%; or, if using a linear calibration curve, a correlation coefficient (r) of 0.99 for each compound	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL (Separate source from ICAL standards)	Beginning of each 12-hour time period, after every 10 samples and end of run	%D between calculated and nominal amount for each compound must be between ±25.0%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Retention time evaluation for CCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation (SD) of the average initial calibration retention time for each analyte.

[c] ICAL and continuing CAL standards must contain all surrogate compounds and target analytes listed in Table 1B.

Table 3. Summary of Internal Quality Control Procedures for Chlorinated Herbicides by SW-846 Method 8151

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One per Batch or SDG per analytical instrument	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate Spike	Every standard, sample and method blank at 10 times CRQL	Water: 75-125% of expected value Soil: 65-135% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries 2. If re-analysis does not solve the problem, re-extract and re-analyze
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG containing a minimum of 5 of the analytes chosen from Table 1B	40-160% of expected value for dinoseb and 65-135% of expected value for other target analytes; 30 RPD between MS and MSD	1. Report in Case Narrative
Laboratory Control Sample (LCS)	One LCS per batch or SDG	40-160% for dinoseb; 80-120% for other target analytes	1. Re–extract and re-analyze all samples processed with an out-of-control LCS

Second column confirmation is required for all positive results. Confirmation must be performed on a column of a phase different from that used for quantitation. Confirmation analyses must meet all calibration criteria specified in Table 2 and blank acceptance criteria specified in Table 3.

VOLATILE ORGANIC COMPOUNDS (VOCs) by SW-846 Method 8260

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Volatile Organic Compounds (VOCs) in Water (unpreserved)	Technical: 7 days from collection; Contract: 5 days from receipt at laboratory	Cool to 4 C ±2 C
VOCs in Water (preserved)	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	HCl to pH <2; Cool to 4 C ±2 C
VOCs in Soil (unpreserved)	Technical: 48 hours Contract: 48 hours	Cool to 4 C ±2 C; sealed zero headspace containers, such as Encore samplers; freezing can extend the holding time [b]
VOCs in Soil (preserved)	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	Preserved samples: in methanol [c] or sodium bisulfate [d]

[a] Individual target compounds are listed in Table 1B.

[b] Freezing the sample can extend the holding time; however, 48 hours unfrozen holding time will be considered cumulative.

[c] Use Method 5030 for purge and trap.

[d] Use Method 5035 for purge and trap.

Table 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits for Volatile Organic Compounds by SW-846 Method 8260

Analyte	**CAS Number**	**CRQL (g/L)** [a]	**CRQL (g/Kg)** [b]
Acetone	67-64-1	10	10
Benzene	71-43-2	1	5
Bromobenzene	108-86-1	1	5
Bromochloromethane	74-97-5	1	5
Bromodichloromethane	75-27-4	1	5
Bromoform	75-25-2	1	5
Bromomethane	74-83-9	1	5
2-Butanone	78-87-5	10	10
n-Butylbenzene	104-51-8	1	5
sec-Butylbenzene	135-98-8	1	5
tert-Butylbenzene	98-06-6	1	5
Carbon disulfide	75-15-0	1	5
Carbon tetrachloride	56-23-5	0.5	5
Chlorobenzene	108-90-7	1	5
Chlorodibromomethane	124-48-1	1	5
Chloroethane	75-00-3	1	5
Chloroform	67-66-3	1	5
Chloromethane	74-87-3	1	5
2-Chlorotoluene	95-49-8	1	5
4-Chlorotoluene	106-43-4	1	5

1,2-Dibromo-3-chloropropane	96-12-8	1	5
1,2-Dibromoethane	106-93-4	1	5
Dibromomethane	74-95-3	1	5
1,2-Dichlorobenzene	95-50-1	1	5
1,3-Dichlorobenzene	541-73-1	1	5
1,4-Dichlorobenzene	106-46-7	1	5
Dichlorodifluoromethane	75-71-8	1	5
1,1-Dichloroethane	75-34-3	1	5
1,2-Dichloroethane	107-06-2	0.5	5
1,1-Dichloroethene	75-35-4	1	5
cis-1,2-Dichloroethene	156-59-2	1	5
trans-1,2-Dichloroethene	156-60-5	1	5
Dichlorofluoromethane	75-43-4	1	5
1,2-Dichloropropane	78-87-5	1	5
2,2-Dichloropropane	594-20-7	1	5
1,3-Dichloropropane	142-28-9	1	5
1,1-Dichloropropene	563-58-6	1	5

Trichlorofluoromethane	75-69-4	1	5
1,2,3-Trichloropropane	96-18-4	1	5
1,2,4-Trimethylbenzene	95-63-6	1	5

1,3,5-Trimethylbenzene	108-67-8	1	5
Vinyl chloride	75-01-4	0.5	5
o-Xylene	95-47-6	1	5
m-Xylene	108-38-3	1	5
p-Xylene	106-42-3	1	5

[a] Based on 25 mL water purge.

[b] Based on wet weight.

Data Calculations and Reporting Units:

Calculate the response factor (RF) and the concentration of individual analytes according to the equations specified in Section 7.3.4 of Method 8260.

Table 2. Summary of Calibration Procedures for VOCs by SW-846 Method 8260

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
GC/MS Tuning with 4-Bromofluorobenzene (BFB)	Beginning of each 12 hour period during which standards samples are analyzed	Ion abundance criteria in Table 4 of Method 8260	1. Identify the problem. 2. MS tune criteria must be met before any calibration standards, samples, blanks, or QC samples are analyzed
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL)[a, b, c]	Initially; whenever required, due to failure of CCV	RSD for RFs 30%	1. Terminate analysis 2. Recalibrate and verify before sample analysis

Sixth ICAL contianing carbon tetrachloride, 1,2-dichloroethane, cis-1,3-dichloropropene, trans-1,3-dichloropropene, and vinyl chloride at a concentration of 0.5 ug/L to verify that the requested CRQLs can be achieved	Initially; whenever required, due to failure of CCV	Minimum RRF requirement for these analyes is 0.05	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV)	Following ICV, every 12-hour, and end of run	%D between RF of CCV and avg RFs from ICAL 30%	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
System Performance Check Compound (SPCC)	With ICAL or CCV	RF for chloromethane, 1,1-dichloroethane, bromoform, 0.10; chlorobenzene, 1,1,2,2-tetrachloroethane, 0.30	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Calibration Check Compounds (CCC)	With ICAL or CCV	RSD for RFs 30%	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Internal Standards (IS)	Each analysis of CCV	-50 to +100% IS retention time (RT) within ±30 seconds from the RT of the CCV	1. Re-analyze all samples analyzed while system was out-of-control 2. If re-analysis of the sample does not solve the problem, then submit data from both the initial analysis and the re-analysis.
Retention time evaluation of CCV standards	Each analysis of CCV standard	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL and continuing CAL standards must contain all target analytes listed in Table 1B.

[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

Table 3. Summary of Internal Quality Control Procedures for VOCs by SW-846 Method 8260

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	Each 12-hour time period, minimum of one per SDG	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Reanalyze all samples processed with a blank that is out of control.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	Water Sample: 65-135% of expected value; 30% RPD between MS and MSD Soil Sample: 50-150% of expected value; 50% RPD between MS and MSD	1. Report in case narrative
Surrogate Spikes [a] (System Monitoring Compounds)	Every sample, standard and method blank	Water Sample: 85-115% except for 1,2-dichloroethane (75-115%) of expected value Soil Sample: 70-125% of expected value	1. Reanalyze all samples with non-compliant surrogate recoveries 2. If re-analysis of the sample does not solve the problem, then submit data from both the initial analysis and the re-analysis.
Laboratory Control Sample (LCS)	One per SDG	Water Sample: 70-130% of expected value Soil Sample: 65-135% of expected value	1. Investigate the source of problem and document. 2. Reanalyze all samples processed with a LCS that is out of control.

[a] Toluene-d_8, BFB, 1,2-dichloroethane-d_4, and Dibromofluoromethane

SEMIVOLATILE ORGANIC COMPOUNDS (SVOCs) by SW-846 Method 8270

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Semivolatile Organic Compounds (SVOCs) in Water	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory; Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C
SVOCs in Soil [b]	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory; Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 1B.

[b] Perform initial sample analysis using a 2-gram sample for mid-level analysis and a 30-gram sample for low-level analysis

Data Calculations and Reporting Units:

Use the mean RRF from the initial calibration to calculate the concentration of individual analytes according to Section 7.7.2 of EPA Method 8270C, Revision 3.0.

Table 1B. Target Compound List and Contract Required Quantitation Limits (CRQLs) for Semivolatile Organic Compounds (SVOCs) by SW-846 Method 8270

Analyte	**CRQL Water (g/L)**	**CRQL Soil (mg/kg)**
1,2-Dichlorobenzene	10	0.33
1,2,4-Trichlorobenzene	10	0.33
1,3-Dichlorobenzene	10	0.33
1,4-Dichlorobenzene	10	0.33
2-Chloronaphthalene	10	0.33
2-Chlorophenol	10	0.33
2-Methylnaphthalene	10	0.33
2-Methylphenol	10	0.33
2-Nitroaniline	25	0.8
2-Nitrophenol	10	0.33
2,2’-oxybis (1-Chloropropane)	10	0.33
2,4-Dichlorophenol	10	0.33
2,4-Dimethylphenol	10	0.33
2,4-Dinitrophenol	25	0.8
2,4-Dinitrotoluene	10	0.33
2,4,5-Trichlorophenol	25	0.8
2,4,6-Trichlorophenol	10	0.33
2,6-Dinitrotoluene	10	0.33

3-Nitroaniline	25	0.8
3,3’-Dichlorobenzidine	10	0.33

4-Bromophenyl-phenylether	10	0.33
4-Chloro-3-methylphenol	10	0.33
4-Chloroaniline	10	0.33
4-Chlorophenyl-phenyl ether	10	0.33
4-Methylphenol	10	0.33
4-Nitroaniline	25	0.8
4-Nitrophenol	25	0.8
4,6-Dinitro-2-methylphenol	25	0.8
Acenaphthene	10	0.33
Acenaphthylene	10	0.33
Anthracene	10	0.33
Benzo(a)anthracene	10	0.33
Benzo(a)pyrene	10	0.33
Benzo(b)fluoranthene	10	0.33
Benzo(g,h,i)perylene	10	0.33
Benzo(k)fluoranthene	10	0.33
bis(2-Chloroethoxy)-methane	10	0.33
bis(2-Chloroethyl) ether	10	0.33

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bis(2-Ethylhexyl)phthalate	10	0.33
Butylbenzylphthalate	10	0.33
Carbazole	10	0.33
Chrysene	10	0.33
Di-n-butylphthalate	10	0.33

Di-n-octylphthalate	10	0.33
Dibenz(a,h)anthracene	10	0.33
Dibenzofuran	10	0.33
Diethylphthalate	10	0.33
Dimethylphthalate	10	0.33
Fluoranthene	10	0.33
Fluorene	10	0.33
Hexachlorobenzene	10	0.33
Hexachlorobutadiene	10	0.33
Hexachlorocyclopentadiene	10	0.33
Hexachloroethane	10	0.33
Indeno(1,2,3-cd)pyrene	10	0.33
Isophorone	10	0.33
N-Nitroso-di-n-propylamine	10	0.33
N-nitrosodiphenylamine	10	0.33

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Naphthalene	10	0.33
Nitrobenzene	10	0.33
Pentachlorophenol	25	0.8
Phenanthrene	10	0.33
Phenol	10	0.33
Pyrene	10	0.33

Notes:

g/L = micrograms per liter.
mg/kg = milligrams per kilogram.

Table 2. Summary of Calibration Procedures for SVOCs by SW-846 Method 8270

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
GC/MS Tuning with decafluorotriphenyl-phosphine (DFTPP)	Beginning of each 12-hour period during which standards samples are analyzed	Ion abundance criteria in Table 3 of Method 8270C, Revision 3.0	1. Identify the problem. 2. MS tune criteria must be met before any calibration standards, samples, blanks, or QC samples are analyzed
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL)[a, b, c]	Initially; whenever required, due to failure of CCV	RSD for RRFs 30%; or correlation coefficient (r) generated by the linear regression must be 0.99 for all analytes	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV) [d]	Beginning of every 12-hour period, and end of run	%D between RRF of CCV and avg RRFs from ICAL 30%; or ±30% of true value for linear regressiion	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV
Integrated areas of Internal Standards	Each analysis	Area must be within -50 to 100 percent.	1. Re-analyze samples with internal standard -50 percent and greater than 100 percent
Retention time evaluation of all standard, surrogate, and sample analytes	Each analysis	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples out control limits

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL and continuing CAL standards must contain all target analytes listed in Table 1B.

[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

[d] If some compounds are beyond the control limits of the CCV and these target compounds are detected in samples and 10 percent or less of these analytes are beyond control limits, a single point calibration may be used to quantify the out-of-control analytes.

Table 3. Summary of Internal Quality Control Procedures for SVOCs by SW-846 Method 8270

QC Element	Frequency	Acceptance Criteria [a]	Corrective Action
Method Blank (MB)	Each 12-hour time period, minimum of one per SDG	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Re-analyze all samples processed with a blank that is out of control.
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	Water Sample: MS and MSD recoveries and RPD between within laboratory limits Soil Sample: MS and MSD recoveries and RPD between within laboratory limits	1. Report in case narrative
Surrogate Spikes	Every sample, standard and method blank	Water Sample: Surrogate recoveries within laboratory limits Soil Sample: Surrogate recoveries within laboratory limits	1. Re-analyze all samples with non-compliant surrogate recoveries
Laboratory Control Sample (LCS)	One per SDG	Water Sample: LCS recoveries within laboratory limits Soil Sample: LCS recoveries within laboratory limits	1. Investigate the source of problem and document. 2. Re-analyze all samples processed with a LCS that is out of control.

[a] Within 3 sigma of laboratory control charts. The laboratory should submit the control charts.

POLYNUCLEAR AROMATIC HYDROCARBONS (PAHs) by SW-846 Method 8310

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	Technical and Contract Holding Times	Preservation

Polynuclear Aromatic Hydrocarbons (PAHs)	Technical for Extraction: 7 days from collection; Contract for Extraction: 5 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C; Store in TFE-fluorocarbon-sealed bottles away from the light
Polynuclear Aromatic Hydrocarbons (PAHs)	Technical for Extraction: 14 days from collection; Contract for Extraction: 10 days from receipt at laboratory Technical and Contract for Analysis: 40 days from extraction	Cool to 4 C ±2 C; Store away from the light

[a] Individual target compounds are listed in Table 1B.

Data Calculations and Reporting Units:

Calculate the sample results using calibration factors determined according to Sections 7.4.2 and 7.8.1 of SW-846 Method 8000A.

TABLE 1B. Target Compound List, CAS Numbers, and Contract Required Quantiation Limits by SW-846 Method 8310

Compound	**CAS Number**	**CRQL Water (µg/L)**	**CRQL Soil (µg/kg)**
Acenaphthene	83-32-9	2	1340
Acenaphthylene	208-96-8	2	1340
Anthracene	120-12-7	0.1	67
Benzo(a)anthracene	56-55-3	0.1	67
Benzo(a)pyrene	50-32-8	0.1	67
Benzo(b)fluoranthene	205-99-2	0.1	67
Benzo(g,h,i)perylene	191-24-2	0.1	67
Benzo(k)fluoranthene	207-08-9	0.1	67
Chrysene	218-01-9	0.1	67
Dibenzo(a,h)anthracene	53-70-3	0.1	67
Fluoranthene	206-44-0	0.1	67
Fluorene	86-73-7	2	1340
Indeno(1,2,3-cd)pyrene	193-39-5	0.1	67
Naphthalene	91-20-3	2	1340
Phenanthrene	85-01-8	0.1	67
Pyrene	129-00-0	0.1	67

Table 2. Summary of Calibration Procedures for Polynuclear Aromatic Hydrocarbons by SW-846 Method 8310

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for CFs 20%	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at midpoint of ICAL	Beginning of each day, after every 10 samples, and end of run	%D between CF of CCV and avg CFs from ICAL 15%	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV
Retention time evaluation forCCV standards	Each analysis of CCV standards	±3 x the SD of the avg ICAL RT for each analyte	1. Re-calibrate and verify 2. Re-analyze samples back to last compliant CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a MDL study as part of the data package.

[b] ICAL and and continuing CAL standards must contain all target analytes listed in Table 1B.

[c] Report the retention time window for each analyte. Determine retention time windows as ±3 x the standard deviation of the average initial calibration retention time for each analyte.

Table 3. Summary of Internal Quality Control Procedures for Polynuclear Aromatic Hydrocarbons by SW-846 Method 8310

QC Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Method Blank (MB)	One per Batch or SDG	< CRQL for each compound	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-extracted and re-analyzed
Surrogate [a]	Every standard, sample, and method blank at 10 times CRQL	65-125% of expected value	1. Re-analyze all samples with non-compliant surrogate recoveries
Matrix Sike and Matrix Spike Duplicate (MS/MSD) [b]	One MS/MSD set per batch or SDG	75-125% of expected value; 30 RPD between MS and MSD	1. Report in case narrative
QC Check Solution	One per Batch or SDG	See Table 3 of SW-846 Method 8310	1. Repeat preparation and analysis of QC check solution.
Cleanup Standard (midpoint concentration)	When column cleanup is used	>85% Recovery	1. Investigate problem, determine cause, and document. 2. Do not analyze samples until cleanup standard is compliant.

[a] The compound decafluorobiphenyl is recommended.

[b] MS/MSD spike should contain a minimum of three PAH compounds chosen from the compound list in Table 1B.

1,4-DIOXANE IN WATER BY SELECTIVE ION MONITORING (SIM) GAS CHROMATOGRAPHY/MASS SPECTROMETRY (GC/MS) by Modified SW-846 Method 8260

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter	**Technical and Contract Holding Times**	**Preservation**
1,4-Dioxane in Water	Technical: 14 days from collection to extraction and analysis; Contract: 10 days from receipt at laboratory to extraction and analysis	Cool to 4 C ±2 C

Analyze water samples for 1,4-dioxane following protocols for GC/MS analysis of volatile organic compounds (VOCs) outlined in SW-846 Method 8260, with the following modifications:

1. Perform GC/MS analysis using selective ion monitoring rather than full scan analysis. Monitor ions of m/e 88 ±0.5 and 58 ±0.5 for 1,4-dioxane. Monitor ions of m/e 96 ±0.5 and 64 ±0.5 for internal standard 1,4-dioxane-d_8.

2. Use 25 mL aliquots of all standards, samples, and blanks.

3. Use a heated purge (50 C).

Data Calculations and Reporting Units:

Calculate the sample results using the procedure outlined in Section 7.3.4 of Method 8260.

TABLE 1B. Target Compound List, CAS Number, and Contract Required Quantitation Limit by Modified SW-846 Method 8260

COMPOUND	CAS No.	CRQL (µg/L)
1-4, Dioxane	123-91-1	5

Table 2. Summary of Calibration Procedures

Calibration Element	Frequency	Acceptance Criteria	Corrective Action
GC/MS Tuning with BFB	Beginning of each 12 hour period during which standards samples are analyzed	Ion abundance criteria provided in Table 1 of the VOA method in OLM03.1	1. Identify the problem. 2. MS tune criteria must be met before any calibration standards, samples, blanks, or QC samples are analyzed
Initial Calibration (minimum blank + 5 points) (ICAL) [a, b]	Initially; whenever required, due to failure of CCV	%RSD for RFs 30%	1. Terminate analysis 2. Re-calibrate and verify before sample analysis
Continuing Calibration Verification (CCV) at 10 g/L (Separate source from ICAL standards)	Beginning of each 12-hour time period, after every 10 samples, and end of run	%D between RFs from CCV and average of ICAL RFs must be <±25%	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be above but near the CRQL. The low ICAL standard must have a signal to noise ratio 5:1. If this requirement cannot be met, the laboratory must submit a method detection limit (MDL) study as part of the data package.

[b] Prepare calibration standards containing 1,4-dioxane at 4, 10, 20, 30, and 40 ng/L in 25 mL of purge volume.

Table 3. Summary of Internal Quality Control Procedures by Modified SW-846 Method 8260

QC Element	Frequency	Acceptance Criteria	Corrective Action

Method Blank (MB)	One per Batch or SDG (1 per 20 samples minimum)	< CRQL	1. Investigate source of contamination and document 2. All samples processed with a method blank that is out of control must be re-analyzed
Instrument Blank	Following any analysis that exceeds the calibration range	< CRQL	1. Instrument blank must indicate a concentration below the CRQL before analysis can continue
Internal Standard (IS) (1,4-dioxane-d_8)	Every standard, sample, method blank, and QC sample at 10 g/L	IS area within a factor of two of the IS area in the associated CCV (-50% to +100%); Retention time (RT) within ±0.5 minutes of the IS RT in the associated CCV	1. Investigate the system for malfunction; 2. Re-analyze all samples analyzed during a system malfunction
Matrix Spike and Matrix Spike Duplicate (MS/MSD)	One MS/MSD set per batch or SDG	50-125% of expected value; 30 RPD between MS and MSD	1. Report in Case Narrative

Spike 1-4-dioxane into the MS/MSD samples at a concentration equivalent to the mid-point calibration standard.

EPA Method TO-14

VOLATILE ORGANIC COMPOUNDS (VOCs) in Ambient Air
Using Summa Canister Sampling and Gas Chromatography (GC) Analysis

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Volatile Organic Compounds (VOCs) in SUMMA® canisters [b]	Technical: 14 days from collection; Contract: 12 days from receipt at laboratory	Ambient temperature; at or near atmospheric pressure
VOCs in tedlar bags	Technical: 48 hours from collection; Contract: 36 hours from receipt at laboratory	Ambient temperature; at or near atmospheric pressure

[a] Individual target compounds are listed in Table 1B.

[b] The laboratory must provide clean and certified 6-liter SUMMA® canisters with the manufacturer's serial number, or a unique permanent identification number attached. For cleaning and certification of SUMMA® canisters, follow the requirements specified in Sections 7.3 and 11 of EPA Method TO-14. After cleaning and certification, the SUMMA canisters will be shipped to the field with a vacuum of < 50 mm TORR. One canister shall be designated as the trip blank for each SDG.

Data Calculations and Reporting Units:

Calculate and report the sample results as specified in the EPA Method TO-14. Perform sample quantitation using the response factor (RF) from the average response factors of the calibrated range. Report results for all target analytes in concentration units of parts per billion by volume (ppbv).

Report tentatively identified compounds (TICs) with a response of <10% of the nearest internal standard.

TIC values should be estimated in ppbv based on the response of the corresponding internal standard.

Table 1B. Target Compound List and Contract Required Quantitation Limits for VOCs by EPA Method TO-14

Analyte	**CAS Numbers**	**CRQL(ppbv)**
Acetone	67-64-1	5
Acetonitrile	27521	5
Acrolein	39120	5
Acrylonitrile	39447	5
Benzene	71-73-2	2
Benzyl chloride	100-44-7	5
Bromodichloromethane	75-27-4	2
Bromomethane	74-83-9	5
1,3-Butadiene	106-99-0	5
2-Butanone	78-87-5	5
Carbon tetrachloride	56-32-5	2
Chlorobenzene	108-90-7	2
Chlorodifluoromethane		2
Chloroethane	0	2
Chloroform	67-66-3	2
Chloromethane	74-87-3	2
3-Chloro-1-propene		2
Cyclohexane	110-82-7	2
Dibromochloromethane	124-48-1	2

1,2-Dibromoethane	106-93-4	2
1,2-Dichlorobenzene	95-50-1	2
1,3-Dichlorobenzene	541-73-1	5
1,4-Dichlorobenzene	106-46-7	5
Dichlorodifluoromethane	75-71-8	2
1,1-Dichloroethane	75-34-3	2
1,2-Dichloroethane	39234	2
1,1-Dichloroethene	75-35-4	5
cis-1,2-Dichloroethene	156-59-2	2
trans-1,2-Dichloroethene	156-60-5	2
1,2-Dichloropropane	78-87-5	2
Dichlorofluoromethane	75-43-4	2
t-1,2-Dichloropropene		2
cis-1,2-Dichloropropene		5
1,2-Dichloro-1,1,2,2-tetra-fluoroethane		2
Ethylbenzene	100-41-4	2
Heptane	142-82-5	2
Hexachlorobutadiene	87-68-3	5
Hexane	110-54-3	2
Methanol	67-56-1	5
Methylene chloride	27638	5
Methyl methacrylate		2
4-Methyl-2-pentanone	39721	5

alpha-Methyl styrene		5
Octane	111-65-9	5
n-Pentane	109-66-0	2
Propylene	42185	5
Styrene	100-42-5	5
1,2,4-Trichlorobenzene	120-82-1	2
1,1,1-Trichloroethane	71-55-6	5
1,1,2-Trichloroethane	0	5
1,1,2,2-Tetrachloroethane	79-34-5	2
Tetrachloroethene	127-18-4	5
Toluene	108-88-3	5
Trichloroethene	28860	2
Trichlorofluoromethane	75-69-4	2
1,1,2-Trichloro-1,2,2-trifluoroethane		2
1,2,4-Trimethylbenzene	95-63-6	2
1,3,5-Trimethylbenzene	108-67-8	2
Vinyl acetate	39571	5
Vinyl chloride	27397	2
Xylenes (m- and p-)		5
Xylene (o-)		5

Table 2. Summary of Calibration Procedures

Calibration Element	**Frequency**	**Acceptance Criteria**	**Corrective Action**
GC/MS Tuning with 4-bromofluorobenzene (BFB)	Beginning of each 12 hour period during which standards and samples are analyzed	Ion abundance criteria in Table 4 of Method TO-14	1. Identify the problem. 2. MS tune criteria must be met before calibration
Initial Calibration (minimum blank + 3 to 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RSD for RFs 25%	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV) (middle of the calibration range)	Following ICV, after every 10 samples, and end of run	%D between RF of CCV and avg. RRFs from ICAL 25%	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV

[a] The ICAL low standard must be at concentrations equivalent to the CRQL.

[b] ICAL and CCV standards must contain all target analytes listed in Table 1B.

[c] Report the retention time (RT) window for each analyte. Determine RT windows as ±3 x the standard deviation (SD) of the average initial calibration RT for each analyte.

Follow the tuning and calibration procedures in Section 10.2.2 and 10.2.3 of EPA Method TO-14 and in SOP #1705, Section 3.7.1 and 3.7.2 of OSWER Directive 9360.4-05, May 1992.

The standards must be traceable to a known certified source.

Table 3. Summary of Internal Quality Control Procedures

QC Element	Frequency	Acceptance Criteria	Corrective Action
Method Blank (MB)	One for each day, minimum of one per SDG	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Reanalyze all samples processed with a blank that is out of control.
Performance Evaluation (PE) sample [a]	One per day or for each SDG batch	80-120% of expected value	1. Reanalyze all samples associated with a non-compliant PE sample.
Surrogate Spikes [b]	Every sample, standard and method blank	70-130% of expected value	1. Reanalyze all samples with non-compliant surrogate recoveries.
Laboratory Duplicates	One of every 10 samples or one per day, whichever is greater	RPD 20 between duplicate results 5 times CRQL; ±CRQL for duplicate results 5 times CRQL	1. Reanalyze all samples with non-compliant results.

[a] PE samples - The National Institute of Standards and Technology (NIST) standard reference materials (SRM) that are traceable to known concentrations.

[b] Surrogates - The laboratory must demonstrate that the selected three surrogates do not interfere with any target analytes.

Dilute and reanalyze samples which contain one or more target analytes at concentrations above the initial calibration range. Results for such reanalyses should fall within the mid-range of the calibration curve. Report results and submit documentation for both analyses.

VOLATILE ORGANIC COMPOUNDS (VOCs) in Air
(Ambient Air/Soil Vapor/Stack Gas) Samples Collected in Specially-Prepared Canisters
and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)

Table 1A. Summary of Holding Times and Preservation

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Volatile Organic Compounds (VOCs) in SUMMA® canisters [b]	Technical: 14 days from collection; Contract: 10 days from receipt at laboratory	Ambient temperature
VOCs in tedlar bags	Technical: 48 hours from collection; Contract: 36 hours from receipt at laboratory	Ambient temperature

[a] Individual target compounds are listed in Table 1B.

[b] The laboratory must provide the following equipment certified as clean:

Cleaned and evacuated 6-liter SUMMA® canisters with the manufacturer's serial number, or a unique permanent identification number attached. For cleaning and certification of SUMMA® canisters, follow the requirements specified in Section 8.4 of EPA Method TO-15 (January 1999).

Cleaned and preset ultra-low flow orifices for each ambient air sample preset by the laboratory at a flow rate of 3.2 mL/min ±10% and digital flow meters capable of accurate measurements in the 3.2 mL/min range.

Leak test all canisters prior to sample collection according to Section 8.4 of Method TO-15 (January 1999).

Data Calculations and Reporting Units:

Calculate and report the sample results as specified in Section 10.8.4 of EPA Method TO-15 (January 1999).

Perform sample quantitation using the relative response factor (RRF) from the daily continuing calibration standard. Report results for all target analytes in concentration units of parts per billion by volume (ppbv). Report tentatively identified compounds(TICs) with a response of <10% of the nearest internal standard. TIC values should be estimated in ppbv based on the response of the corresponding internal standard.

Table 1B. Target Compound List, CAS Numbers, and Contract Required Quantitation Limits

Analyte	CAS Number	CRQL ppbv	CRQL ug/M3	CRQL ug/L	MDL ppbv	MDL ug/M3
Benzene	71-43-2	1.0	3.5	0.0035	0.2	0.7
Bromomethane	74-83-9	1.0	4.2	0.0042	0.2	0.8
Carbon Tetrachloride	56-23-5	1.0	6.9	0.0069	0.2	1.4
Chlorobenzene	108-90-7	1.0	5.0	0.0050	0.2	1.0
Chloroethane	75-00-3	1.0	2.9	0.0029	0.2	0.6
Chloroform	67-66-3	1	5.3	0.0053	0.2	1.1
Chloromethane	74-87-3	1	2.3	0.0023	0.2	0.5
1,1-Dichloroethane	75-34-3	1	4.4	0.0044	0.2	0.9
1,2-Dichloroethane	107-06-2	1	4.4	0.0044	0.2	0.9
1,1-Dichloroethene	75-35-4	1.0	4.3	0.0043	0.2	0.9
cis-1,2-Dichloroethene	156-59-2	1.0	4.3	0.0043	0.2	0.9
trans-1,2-Dichloroethene	156-60-5	1.0	4.3	0.0043	0.2	0.9
1,2-Dichloropropane	78-87-5	1.0	5.0	0.0050	0.2	1.0
cis-1,3-Dichloropropene	10061-01-5	1.0	5.0	0.0050	0.2	1.0
trans-1,3-Dichloropropene	10061-02-6	1.0	5.0	0.0050	0.2	1.0
Ethylbenzene	100-41-4	1.0	4.7	0.0047	0.2	0.9
Methylene Chloride	75-09-2	1.0	3.8	0.0038	0.2	0.8
Styrene	100-42-5	1.0	4.6	0.0046	0.2	0.9
1,1,2,2-Tetrachloroethane	79-34-5	1.0	7.5	0.0075	0.2	1.5
Tetrachloroethene	127-18-4	1.0	7.4	0.0074	0.2	1.5
Toluene	108-88-3	1.0	4.1	0.0041	0.2	0.8
1,1,1-Trichloroethane (TCA)	71-55-6	1	6.0	0.0060	0.2	1.2
1,1,2-Trichloroethane	79-00-5	1	6	0.0060	0.2	1.2
Trichloroethene (TCE)	79-01-6	1.0	5.9	0.0059	0.2	1.2
Vinyl Chloride	75-01-4	1.0	2.8	0.0028	0.2	0.6
p-Xylene & m- Xylene	106-42-3 & 108-38-3	2.0	9.5	0.0095	0.4	1.9
o-Xylene	95-47-6	1.0	4.7	0.0047	0.2	0.9

EPA Method TO-15 (January 1999)

Table 2. Summary of Calibration Procedures

Calibration Element	Frequency	Acceptance Criteria	Corrective Action
GC/MS Tuning with 4-bromofluorobenzene (BFB)	Beginning of each 12 hour period during which standards and samples are analyzed	Ion abundance criteria in Table 3 of Method TO-15	1. Identify the problem. 2. MS tune criteria must be met before calibration
Initial Calibration (minimum blank + 5 points for each analyte) (ICAL) [a, b, c]	Initially; whenever required, due to failure of CCV	RRFs 0.05 for each analyte; RSD for RRFs 30%	1. Terminate analysis 2. Recalibrate and verify before sample analysis
Continuing Calibration Verification (CCV) (middle of the calibration range)	Following ICV, every 12-hour, and end of run	RRFs 0.05 for each analyte; %D between RRF of CCV and avg. RRFs from ICAL 30%	1. Recalibrate and verify 2. Reanalyze samples back to last good CCV
CRQL standard	Every 12 hour	65-135% of the expected value	1. Recalibrate and verify 2. Reanalyze samples back to last good CRQL standard
Internal Standards [d]	Every standard, sample, blank, and QC sample	IS area within ±40% of the IS area in the associated CCV	1. Investigate the system; 2. Re-analyze all samples analyzed during a system malfunction
Retention time evaluation	Each analysis	±0.50 minute of the IS retention time in the associated CCV	1. Re-calibrate and verify 2. Re-analyze samples back to last good CCV

[a] The ICAL low standard must be at concentrations equivalent to the CRQL.

[b] ICAL and CCV standards must contain all target analytes listed in Table 1B.

[c] Report the retention time (RT) window for each analyte. Determine RT windows as ±3 x the standard deviation (SD) of the average initial calibration RT for each analyte.

[d] Internal standards: Bromochloromethane, 1,4-Difluorobenzene, and Chlorobenzene-d5. The standards must be traceable to known certified source. Humidify calibration standards when used.

EPA Method TO-15 (January 1999)

Table 3. Summary of Internal Quality Control Procedures

QC Element	Frequency	Acceptance Criteria	Corrective Action

Method Blank (MB)	Each 12-hour time period, minimum of one per SDG	< CRQL for each compound	1. Investigate the source of contamination and document. 2. Reanalyze all samples processed with a blank that is out of control.
Blank Spike Blank Spike Duplicate (BS/BSD)	One BS/BSD set per batch or SDG (1 MS/MSD set per 20 samples minimum)	65-135% of expected value; 35% RPD between BS and BSD	1. Report in case narrative
Surrogate Spikes [a]	Every sample, standard and method blank	80-120% of expected value	1. Reanalyze all samples with non-compliant surrogate recoveries
Laboratory Duplicates	One per SDG	RPD 20 between duplicate results 5 times CRQL; ±CRQL for duplicate results 5 times CRQL	1. Reanalyze all samples with non-compliant results

[a] 1,2-dichloroethane-d_4, Toluene-d_8, and 4-Bromofluorobenzene. If other surrogates are used the laboratory must demonstrate that the surrogates do not interfere with any target analytes. The laboratory must also notify the Region in advance.

Reanalyze samples containing target analytes at concentrations greater than the initial calibration range. Analyze a smaller aliquot of sample from the SUMMA® canister. If after analyzing a smaller aliquot, the concentration is still greater than the initial calibration range, then dilute the sample and reanalyze according to procedures outlined in EPA Method TO-15. If sample dilution is necessary, the dilution must be adjusted so that the target analyte is quantitated at a level in the upper half of the calibration range. Report the results and submit documentation for the analysis of both the diluted and undiluted sample.

Both the primary ions and the secondary ions must be present in the spectra. The acceptance level for relative abundance of the appropriate ions in all standards, method blanks, QC samples, laboratory duplicates and field samples is determined to be ±20% of the expected abundance observed in the most recent continuing calibration standard. All ions greater than 15% in the standard spectrum must be present in the sample spectrum.

Toxicity Characteristic Leaching Procedure (TCLP) by SW-846 Method 1311 for VOCs, SVOCs, Chlorinated Pesticides, Herbicides, and Metals

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Table 1A. Summary of Holding Times and Preservation for TCLP Extraction for Volatile Organic Compounds (VOCs)

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation** [b]
Volatile Organic Compounds (VOCs) in Water	Technical for TCLP Extraction: 14 days from collection; Contract for TCLP Extraction: 10 days from receipt at laboratory; Technical and Contract Analysis: 14 days from date of TCLP extraction to analysis.	Cool to 4 C ±2 C
VOCs in Soil [c],[d]	Technical and Contract for TCLP Extraction: 48 hours cumulative from collection; (7 days if frozen) [c] Technical and Contract of TCLP Extract: 7 days from date of TCLP extraction to analysis.	Cool to 4 C ±2 C; sealed zero headspace containers.

[a] Individual target compounds are listed in Table 1B.
[b] Preservatives should not be added to samples before extraction.
[c] Freezing of soil samples requires contract approval.
[d] Freezing of En Core ™ samplers requires contract approval.

Data Calculations and Reporting Units:

Determine the percent solid as specified in Section 7.1 of SW-846 Method 1311 and report the result as percent solid. Extract the second sample/aliquot according to Section 7.3 of SW-846 Method 1311.

Analyze the extract for VOCs by SW-846 Method 8260, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), (Revision 3.0).

Calculate the response factor (RF) and the concentration of individual analytes according to the equations specified in Sections 7.3 and 7.5 of SW-846 Method 8260B, Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), (Revision 2). Report final analyte concentration in units of micrograms per liter (g/L). Report results that are less than 10 g/L to 1 significant figure, and results that are greater than or equal to 10 g/L to 2 significant figures.

Table 1B. Target Compound List, Contract Required Quantitation Limits (CRQLs), and Regulatory and Spiking Levels for VOCs

Analyte	**CRQL g/L**	**Regulatory Level mg/L**	**Spiking Level g/L**
Benzene	10	0.5	50

Carbon tetrachloride	10	0.5	50
Chlorobenzene	10	100	50
Chloroform	10	6	50
1,4-Dichlorobenzene	10	7.5	50
1,2-Dichloroethane	10	0.5	50
1,1-Dichloroethene	10	0.7	50
Methyl ethyl ketone	10	200	50
Tetrachloroethene	10	0.7	50
Trichloroethene	10	0.5	50
Vinyl chloride	10	0.2	50

Table 2A. Summary of Holding Times and Preservation for TCLP Extraction for SVOCs

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation** [b]
Semivolatile Organic Compounds (SVOCs)	Technical for TCLP Extraction: 14 days from collection; Contract for TCLP Extraction: 10 days from receipt at laboratory; Technical and Contract of TCLP Extract: 7 days from date of TCLP extraction to preparative extraction; Technical for Analysis: 40 days from preparative extraction; Contract for Analysis: 35 days from preparative extraction.	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 4B.
[b] Preservatives should not be added to samples before extraction.

Data Calculations and Reporting Units:

Determine the percent solid as specified in Section 7.1 of SW-846 Method 1311 and report the result as percent solid. Extract the second sample/aliquot according to Section 7.3 of SW-846 Method 1311.

Analyze the extract for SVOCs by SW-846 Method 8270C, Semivolatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS), (Revision 3.0).

Calculate the concentration of individual analytes according to Section 7.7.2 of EPA Method 8270C. Report final analyte concentration in units of micrograms per liter (g/L). Report results that are less than 10 g/L to 1 significant figure, and results that are greater than or equal to 10 g/L to 2 significant figures.

Table 2B. ***Target Compound List, Contract Required Quantitation Limits (CRQLs), and Regulatory and Spiking Levels for SVOCs***

Analyte	CRQL g/L	Regulatory Level mg/L	Spiking Level g/L
o-Cresol (2-Methylphenol)	10	200	50
m-Cresol (3-Methylphenol)	10	200	50
p-Cresol (4-Methylphenol)	10	200	50
2,4-Dinitrotoluene	10	0.13	50
Hexachlorobenzene	10	0.13	50
Hexachloro-1,3-butadiene	10	0.5	50
Hexachloroethane	10	3	50
Nitrobenzene	10	2	50
Pentachlorophenol	25	100	75
Pyridine	25	5	75
2,4,5-Trichlorophenol	25	400	75
2,4,6-Trichlorophenol	10	2	50

Table 3A. Summary of Holding Times and Preservation for TCLP Extraction of Chlorinated Pesticides

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation** [b]
Chlorinated Pesticides	Technical for TCLP Extraction: 14 days from collection; Contract for TCLP Extraction: 10 days from receipt at laboratory; Technical and Contract of TCLP Extract: 7 days from date of TCLP extraction to preparative extraction; Technical for Analysis: 40 days from preparative extraction; Contract for Analysis: 35 days from preparative extraction.	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 7B.
[b] Preservatives should not be added to samples before extraction.

Data Calculations and Reporting Units:

Determine the percent solid as specified in Section 7.1 of SW-846 Method 1311 and report the result as percent solid. Extract the second sample/aliquot according to Section 7.3 of SW-846 Method 1311.

Analyze the extract for pesticides by SW-846 Method 8081, Chlorinated Pesticides by Gas Chromatography.

Calculate the calibration factors (CF) of single component pesticides according to Section 7.4 of SW-846 Method 8081, Organochlorine Pesticides and PCBs as Aroclors by Gas Chromatography: Capillary Column Technique, (Revision 0). Calculate sample results using the analyte CFs from the midpoint standard of the associated initial calibration curve. Perform sample quantitation for multiple components pesticides according to Section 7.6 of SW-846 Method 8081. Report final analyte concentration in units of micrograms per liter (g/L). Report results that are less than 10 g/L to 1 significant figure, and results that are greater than or equal to 10 g/L to 2 significant figures.

Table 3B: Target Compound List, Contract Required Quantitation Limits (CRQLs), and Regulatory and Spiking Levels for Chlorinated Pesticides

Analyte	**CRQL g/L**	**Regulatory Level mg/L**	**Spiking Level g/L**
Chlordane (Technical)	0.5	0.03	5
Endrin	0.1	0.02	1
Heptachlor	0.05	0.008	0.5
Heptachlor epoxide	0.05	0.008	0.5
Lindane (gamma-BHC)	0.05	0.4	0.5
Methoxychlor	0.5	10	5
Toxaphene	5	0.5	50

Table 4A. Summary of Holding Times and Preservation for TCLP Extraction of Chlorinated Herbicides

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation** [b]
Chlorinated Herbicides	Technical for TCLP Extraction: 14 days from collection; Contract for TCLP Extraction: 10 days from receipt at laboratory; Technical and Contract of TCLP Extract: 7 days from date of TCLP extraction to preparative extraction; Technical for Analysis: 40 days from preparative extraction; Contract for Analysis: 35 days from preparative extraction.	Cool to 4 C ±2 C

[a] Individual target compounds are listed in Table 10B.
[b] Preservatives should not be added to samples before extraction.

Data Calculations and Reporting Units:

Determine the percent solid as specified in Section 7.1 of SW-846 Method 1311 and report the result as percent solid. Extract the second sample/aliquot according to Section 7.3 of SW-846 Method 1311.

Analyze the extract for herbicides by SW-846 Method 8151A, Chlorinated Herbicides by Gas Chromatography.

Calculate calibration factors and sample results according to Sections 7.7 and 7.8 of SW-846 Method 8151B, Chlorinated Herbicides by Gas Chromatography, (Revision 1). Report final analyte concentration in units of micrograms per liter (g/L). Report results that are less than 10 g/L to 1 significant figure, and results that are greater than or equal to 10 g/L to 2 significant figures.

Table 4B. Target Compound List, Contract Required Quantitation Limits (CRQLs), and Regulatory and Spiking Levels for Chlorinated Herbicides

Analyte	**CRQL g/L**	**Regulatory Level mg/L**	**Spiking Level g/L**
2,4-D	12	10	60-100
2,4,5-TP (Silvex)	7	10	35-100

Table 5A. Summary of Holding Times and Preservation for TCLP Extraction of Metals

Analytical Parameter [a]	**Technical and Contract Holding Times**	**Preservation**
Metals (except mercury)	Technical: 180 days from date of collection to TCLP extraction and another 180 days from date of TCLP extraction to analysis; Contract: TCLP extraction 26 days from sample receipt at laboratory and analysis within 26 days of extraction	Cool to 4 C ±2 C After extraction and filtration, pH <2 with nitric acid
Mercury	Technical: 28 days from date of collection to TCLP extraction and another 28 days from date of TCLP extraction to analysis; Contract: TCLP extraction 26 days from sample receipt at laboratory and analysis within 26 days of extraction	Cool to 4 C ±2 C After extraction and filtration, pH <2 with nitric acid

[a] Individual target compounds are listed in Table 13B.

Data Calculations and Reporting Units:

Calculate the sample results according to the protocols of the appropriate analytical method: SW-846 Method 6010B (ICP) Section 7.6, SW-846 Methods 7470/7471 (CVAA) Sections 7.5 and 7.6, respectively, and SW-846 Method 1311 (TCLP Extraction) Section 7.2.14.

Analyze the extract for metals by SW-846 Method 6010 and for mercury by SW-846 Method 7470/7471.

Report sample results in concentration units of milligrams per liter (mg/L).

TABLE 5B. Target Compound List, CAS Numbers, Contract Required Detection Limits, Regulatory and Spiking Levels for Metals

COMPOUND	CAS No.	CRDL (mg/L)	Regulatory Level (mg/L)	Spiking Level (mg/L)
Arsenic	7440-38-2	0.5	5.0	2.5 - 5.0
Barium	7440-39-3	1	100	50 - 100
Cadmium	7440-43-9	0.1	1.0	0.5 - 1.0
Chromium	7440-47-3	0.5	5.0	2.5 - 5.0
Lead	7439-92-1	0.5	5.0	2.5 - 5.0
Mercury	7439-97-6	0.02 [a]	0.2	0.1 - 0.2
Selenium	7782-49-2	0.1	1.0	0.5 - 1.0
Silver	7440-22-4	0.5	5.0	2.5 - 5.0

[a] Mercury analysis is to be performed using 10 mL aliquots diluted to 100 mL. The CRDL has been adjusted to account for this 10x dilution.

ATTACHMENT 3

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES AND REQUIREMENTS

Attachment 3 - Quality Assurance/Quality Control Procedures and Requirements

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1.0 OVERVIEW

1.1 Quality assurance and quality control are integral parts of the Environmental Protection Agency's (EPA) Regional Environmental Analytical Procurement (REAP) program. The quality assurance (QA) process consists of management review and oversight at the planning, implementation, and completion stages of the environmental data generation activity, and ensures that data provided are of the quality required for their intended use. The quality control (QC) process includes those activities required during data generation to produce the data quality desired and to document the quality of the collected data.

1.2 During the planning of an environmental data generation program, QA activities focus on defining data quality criteria and designing a QC system to measure the quality of data being generated. During the implementation of the data generation effort, QA activities ensure that the QC system is functioning effectively, and that the deficiencies uncovered by the QC system are corrected. After environmental data are collected, QA activities focus on assessing the quality of data obtained to determine their suitability to support enforcement or remedial decisions.

1.3 This exhibit describes expected overall QA/QC operations and the processes by which the REAP program meets the objectives defined above. This contract requires a variety of QA/QC activities. These contract requirements are the minimum QC operations necessary to satisfy the analytical requirements associated with the determination of the different method analytes. These QC operations are designed to facilitate data comparison by providing EPA with comparable data from all Contractors. These requirements do not release the analytical Contractor from maintaining its own QC checks on method and instrument performance.

2.0 INTRODUCTION

2.1 Appropriate use of data generated under the large range of analytical conditions encountered in environmental analyses requires reliance on the QC procedures and criteria incorporated into the methods. Several of the methods in this contract have been validated on samples typical of those received by the laboratories in the Contract Laboratory Program (CLP). However, the validation of these methods does not guarantee that they perform equally well for all sample matrices encountered. Inaccuracies can also result from causes other than unanticipated matrix effects, such as sampling artifacts, equipment malfunctions, and operator error. Therefore, the quality control component of each method is indispensable.

2.2 The data acquired from QC procedures are used to estimate and evaluate the information content of analytical results and to determine the necessity for or the effect of corrective action procedures. The parameters used to estimate information content include precision, accuracy, detection limit, and other quantitative and qualitative indicators. In addition, QC procedures give an overview of the activities required in an integrated program to generate data of known and documented quality required to meet defined objectives.

2.3 The necessary components of a complete QA/QC program include internal QC criteria that demonstrate acceptable levels of performance, as determined by QA review. External review of data and procedures is accomplished by the monitoring activities of the EPA. Each external review accomplishes a different purpose. These reviews are described in specific sections of this Attachment. Performance evaluation samples, GC/MS tape audits, and data packages provide an external QA reference for the program. An on-site evaluation is also part of the external QA monitoring system. A feedback loop provides the results of the various review functions to the Contractor through direct communications with the EPA.

2.4 This Attachment does not provide specific instructions for constructing QA plans, QC systems, or a QA organization. It is, however, an explanation of the QA/QC requirements of the program. It outlines some minimum standards for QA/QC programs. It also includes specific items that are required in a QA plan and by the QA/QC documentation detailed in this contract.

2.5 In order to assure that the product delivered by the Contractor meets the requirements of the contract, and to improve interlaboratory data comparison, the Agency requires the following from the Contractor:

- Preparation of and adherence to a written laboratory quality assurance plan (LQAP), the elements of which are described in Section 3;
- Preparation of and adherence to standard operating procedures (SOPs) as described in Section 4;

- Adherence to the analytical methods and associated QC requirements specified in the contract;
- Verification of analytical standards and documentation of the purity of neat materials and the purity and accuracy of solutions obtained from private chemical supply houses;
- Submission of all raw data and pertinent documentation in the form of data packages for Regional review;
- Participation in the analysis of performance evaluation samples, including adherence to corrective action procedures;
- Submission, upon request, of GC/MS tapes and applicable documentation for tape audits, including a hardcopy of the sample data package;
- Participation in on-site laboratory evaluations, including adherence to corrective action procedures; and
- Submission of all original documentation generated during sample analyses for Agency review.

2.6 In order for the QA/QC information to reflect the status of the samples analyzed, all samples and their QA/QC analysis shall be analyzed under the same operating and procedural conditions.

2.7 If any QC measurement fails to meet contract criteria, the appropriate corrective action, as specified in Attachment 2, should be followed.

2.8 The Contractor shall report all QC data in the format specified in Attachment 1.

2.9 EPA Methods of Monitoring. EPA may choose to independently verify contractor performance and compliance with the requirements of subject contract, and the contractor's implementation of its own written procedures (as required by this SOW). Independent verification may be through one method, or a combination of methods, as described herein, e.g. regional data reviews, performance evaluation samples, GC/MS tape audits, data package audits, and on-site laboratory evaluations. The Contractor will be notified of any independent verification and/or review, in advance, and these will be conducted at reasonable times.

Utilizing the aforementioned methods of monitoring are ways in which EPA can measure performance, can be a tool for continuous contractual improvement, and can assist EPA in its efforts to ensure the validity and quality of data to support is investigative and cleanup respons-ibilities.

2.9.1 Notification of Deficiencies. As a result of monitoring, based on the above, if the EPA PO and CO determine contractor performance or deliverables to be unacceptable, the Contractor shall be notified by EPA concerning the deficiency(s) and required remedy(s). If the EPA CO determines, after discussions with all parties, that a contractual remedy(s) is required, the EPA CO will determine what actions need to be taken, which could include: reduction of the number of samples sent under subject contract, suspension of sample shipment to the Contractor, additional audits as described herein, not exercising contractual options, other contractual sanctions, etc, all in accordance with the terms and conditions of subject contract.

2.9.2 Performance Reports and Feedback. After completion of the reviews described in 2.9, the EPA CO will transmit a copy of EPA's report to the Contractor, or the EPA PO and CO may decide to discuss the results of the review(s) with the Contractor during an on-site laboratory evaluation. If performance deficiences are found during EPA's reviews, the Contractor, within 14 calendar days of receipt of EPA's written review comments, shall provide a written description of corrective actions to be taken.

Contractual remedies, such as a notification of termination, will not be taken unless EPA discusses performance issues with the Contractor, and the Contractor's response is considered, and a corrective action plan is initiated.

2.9.3 SOP Revisions Due to Performance Feedback. If new SOPs are required to be written and/or existing ones amended, by the Contractor, because of performance deficiencies, and subsequent corrective actions implemented

by the Contractor, the Contractor shall write/amend the SOPs required under this SOW, at no additional cost to the Government.

3.0 LABORATORY QUALITY ASSURANCE PLAN (LQAP)

3.1 Introduction. The Contractor shall have an established laboratory quality assurance program with the objective of providing sound analytical chemical measurements. This program shall incorporate quality control procedures, any necessary corrective action, and all documentation required during data generation as well as the quality assessment measures performed by management to ensure acceptable data production.

3.1.1 As evidence of such a program, the Contractor shall prepare a written laboratory quality assurance plan (LQAP) which describes the procedures that are implemented to achieve the following:

- Maintain data integrity, validity, and usability;
- Ensure that analytical measurement systems are maintained in an acceptable state of stability and reproducibility;
- Detect problems through data assessment and establish corrective action procedures which keep the analytical process reliable; and
- Document all aspects of the measurement process in order to provide data which are technically sound and legally defensible.

3.1.2 The LQAP shall present, in specific terms, the policies, organization, objectives, functional guidelines, and specific QA and QC activities designed to achieve the data quality requirements in this contract. Where applicable, a standard operating procedure pertaining to a particular element may be referenced as part of the LQAP. The LQAP shall be paginated consecutively in ascending order. The LQAP shall be available during on-site laboratory evaluations.

3.2 Required Elements of a Laboratory Quality Assurance Plan. The required elements of a laboratory's LQAP are outlined in this section. This outline should be used as a framework for developing the LQAP.

A. Organization and Personnel

1. QA Policy and Objectives
2. QA Management
   a. Organization
   b. Assignment of QA and QC Responsibilities
   c. Reporting Relationships
   d. QA Document Control Procedures
   e. QA Program Assessment Procedures
3. Personnel
   a. Resumes
   b. Education and Experience
   c. Training Program

B. Facilities and Equipment

1. Instrumentation and Backup Alternatives
2. Maintenance Activities and Schedules

C. Document Control

1. Contractor Notebook Policy
2. Sample Tracking/Custody Procedures
3. Logbook Maintenance and Archiving Procedures

4. Case File Organization, Preparation and Review Procedures

5. Procedures for Preparation, Approval, Review, Revision, and Distribution of Standard Operating Procedures

6. Process for Revision of Technical or Documentation Procedures

D. Analytical Methodology

1. Calibration Procedures and Frequency, Decision Processes, Procedures, and Responsibility for Initiation of Corrective Action

2. Sample Preparation/Extraction Procedures

3. Sample Analysis Procedures

E. Data Generation

1. Data generation Procedures

2. Data Reduction Procedures

3. Data Validation Procedures

4. Data Reporting and Authorization Procedures

F. Quality Control

1. Solvent, Reagent and Adsorbent Check Analysis

2. Reference Material Analysis

3. Internal Quality Control Checks

4. Decision Processes, Procedures, and Responsibility for Initiation of Corrective Action in Response to F.1, F.2, F.3

(h) Determination of QC Limit Procedures

G. Quality Assurance

1. Data Review

2. Systems/Internal Audits

3. Performance/External Audits

4. Corrective Action Procedures in Response to Audit Findings

5. Quality Assurance Reporting Procedures

H. Health and Safety Programs - Training and Documentation

I. Compliance with Environmental Regulations

1. Air Pollution Prevention Measures

2. Aqueous Effluent Discharge

3. Hazardous and Nonhazardous Waste Management Practices

4. Hazardous Waste Manifesting

3.3 Updating and Submitting the Laboratory Quality Assurance Plan

3.3.1.1 Within twenty eight (28) calendar days after contract award, the Contractor shall submit its LQAP <u>which is in compliance with the requirements of this contract</u> to EPA. Within 42 calendar days of receipt of the LQAP, EPA will either provide written comments to the Contractor or approve the LQAP. Within 14 calendar days of receipt of EPA written comments, the Contractor shall submit a revised LQAP which is in compliance with the requirements of this contract.

3.3.1.2 The Contractor shall maintain on file a revised LQAP, fully compliant with the requirements of this contract. The revised LQAP will become the official

LQAP under the contract and may be used during legal proceedings. The Contractor shall maintain the LQAP on file at the Contractor's facility for the term of the contract.

3.3.1.3 Both the initial submission and the revised LQAP shall be paginated consecutively in ascending order. The revised LQAP shall include:

- Changes resulting from (1) the Contractor's internal review of its organization, personnel, facility, equipment, policy and procedures and (2) the Contractor's implementation of the requirements of the contract; and

3.3.2 Subsequent Updates and Submissions. During the term of the contract, the Contractor shall amend the LQAP when the following circumstances occur:

- The Agency modifies the contract, and the resultant change causes a modification to the LQAP to be necessary;
- The Agency notifies the Contractor of deficiencies in the LQAP;
- The Agency notifies the Contractor of deficiencies resulting from the Agency's review of the Contractor's performance;
- The Contractor identifies deficiencies resulting from the internal review of the LQAP;
- The Contractor's organization, personnel, facility, equipment, policy or procedures change; or
- The Contractor identifies deficiencies resulting from the internal review of changes in its organization, personnel, facility, equipment, policy or procedures.

3.3.2.1 The Contractor shall amend the LQAP within 28 calendar days of when the circumstances listed above result in a discrepancy between what was previously described in the LQAP and what is presently occurring at the Contractor's facility. When the LQAP is amended, all changes in the LQAP shall be clearly marked (e.g., a bar in the margin indicating where the change is found in the document, or highlighting the change by underlining the change, bold printing the change, or using a different print font). The amended pages shall have the date on which the changes were implemented. The Contractor shall incorporate all amendments to the current LQAP. The Contractor shall archive all amendments to the LQAP for future reference by the Agency.

3.3.3 The Contractor shall send a copy of the current LQAP within 7 calendar days of a request from the EPA. The Agency requestor will designate the recipients.

4.0 STANDARD OPERATING PROCEDURES

4.1 Introduction. In order to obtain reliable results, adherence to prescribed analytical methodology is imperative. In any operation that is performed on a repetitive basis, reproducibility is best accomplished through the use of standard operating procedures (SOPs). As defined by EPA, an SOP is a written document which provides directions for the step-by-step execution of an operation, analysis, or action which is commonly accepted as the method for performing certain routine or repetitive tasks.

4.1.1 SOPs prepared by the Contractor shall be functional (i.e., clear, comprehensive, up-to-date, and sufficiently detailed to permit duplication of results by qualified analysts). The SOPs shall be paginated consecutively in ascending order.

4.1.2 All SOPs shall reflect activities as they are currently performed by the Contractor. In addition, all SOPs shall:

- Be consistent with current Agency regulations, guidelines, and the REAP contract's requirements;
- Be consistent with instrument manufacturers' specific instruction manuals;
- Be available to the Agency during an on-site laboratory evaluation. A complete set of SOPs shall be bound together and available for inspection at such evaluations. During on-site evaluations, Contractor personnel may be asked to demonstrate the application of the SOPs;

- Describe the development of documentation that is sufficiently complete to record the performance of all tasks required by the protocol;
- Describe the review procedures of data reported by the Contractor and explaining the cause of missing or inconsistent results;
- Describe the corrective measures and feedback mechanism utilized when analytical results do not meet protocol requirements;
- Be reviewed regularly and updated as necessary when contract, facility, or Contractor procedural modifications are made;
- Be archived for future reference in usability or evidentiary situations;
- Be available at specific work stations as appropriate; and
- Be subject to a document control procedure which precludes the use of outdated or inappropriate SOPs.

4.2 Format. The format for SOPs may vary depending upon the kind of activity for which they are prepared; however, at a minimum, the following sections shall be included:

- Title page
- Scope and application
- Definitions
- Procedures
- QC limits
- Corrective action procedures when QC limits are not met
- Procedures for secondary review of information being generated
- Documentation description and example forms
- Miscellaneous notes and precautions
- References

4.3 Requirements. The SOPs to be maintained by the Contractor shall include, but not be limited to, the following:

(a) Sample Receipt, Identification, Security, Storage, etc. (see Attachment 4, Section 2.0)

(b) Sample Preparation

(c) Glassware Cleaning

(d) Calibration (Balances)

(e) Analytical Procedures

(f) Maintenance Activities

(g) Analytical Standards (if not described in methods SOPs)

(h) Data Reduction Procedures

(i) Documentation Policy/Procedures

(j) Data Validation/Self-Inspection Procedures

(k) Data Management and Handling

4.3.1 Evidentiary SOPs format
Evidentiary SOPs for required chain-of-custody and document control are discussed in Attachment 4.

4.4 Submitting and Updating SOPs

4.4.1.1 Within twenty eight (28) calendar days after contract award, the Contractor shall submit a complete set of SOPs which is in compliance with the requirements of this contract to EPA. Within 42 calendar days of receipt of the SOPs, EPA will either provide written comments to the Contractor or approve the SOPs. Within 14 calendar days of receipt of EPA written comments, the Contractor shall submit a complete revised set of SOPs which are in compliance with the requirements of this contract.

4.4.1.2 The Contractor shall maintain on file a complete revised set of SOPs, fully compliant with the requirements of this contract. The revised SOPs will become the official SOPs under the contract and may be used during legal proceedings. The Contractor shall maintain the complete set of SOPs on file at the Contractor's facility for the term of the contract.

4.4.1.3 Both initial submission of SOPs and the revised SOPs shall each be paginated consecutively in ascending order. The revised SOPs shall include:

- Changes resulting from (1) the Contractor's internal review of its procedures and (2) the Contractor's implementation of the requirements of the contract.

4.4.2 Subsequent Updates and Submissions. During the term of the contract, the Contractor shall amend the SOPs when the following circumstances occur:

- The Agency modifies the contract;
- The Agency notifies the Contractor of deficiencies in its SOPs;
- The Agency notifies the Contractor of deficiencies resulting from the Agency's review of the Contractor's performance;
- The Contractor's procedures change;
- The Contractor identifies deficiencies resulting from the internal review of its SOPs documentation; or
- The Contractor identifies deficiencies resulting from the internal review of its procedures.

4.4.2.1 Existing SOPs shall be amended or new SOPs shall be written within 28 calendar days of when the circumstances listed above result in a discrepancy between what was previously described in the SOPs and what is presently occurring at the Contractor's facility. All changes in the SOPs shall be clearly marked (e.g., a bar in the margin indicating where the change is in the document, or highlighting the change by underlining the change, bold printing the change, or using a different print font). The amended/new SOPs shall have the date on which the changes were implemented.

4.4.2.2 When existing SOPs are amended or new SOPs are written, the Contractor shall document the reason(s) for the change, and maintain the amended or new SOPs on file at the laboratory facility. Documentation of the reason(s) for the changes shall be maintained on file with the amended SOPs or new SOPs.

4.4.2.3 Documentation of the reason(s) for changes to the SOPs shall also be submitted with the SOPs.

4.4.3 The Contractor shall send individually requested SOPs or sets of SOPs, within 7 calendar days of a request from the EPA PO or CO. The Agency requestor will designate the recipients.

5.0 ANALYTICAL STANDARDS REQUIREMENTS

5.1 Overview. EPA will not supply analytical reference standards either for direct analytical measurements or for the purpose of traceability. All Contractors shall be required to purchase from private chemical supply houses, or prepare from neat materials, those standards necessary to successfully and accurately perform the analyses required in this protocol.

5.2 Purchase of Chemical Standards Already in Solution. Solutions of analytical reference standards can be purchased by Contractors provided they meet the following criteria.

5.2.1 The Contractor shall demonstrate the quality of the standards by purchasing and analyzing a standard from a second source. The percent difference (%D) between the two standards shall be $\pm$ 10%.

5.3 Preparation of Chemical Standards from the Neat High Purity Bulk Material. A Contractor may prepare its chemical standards from neat materials. Contractors shall obtain the highest purity possible when purchasing neat chemical standards; when standards are purchased at less than 97% purity, the Contractor shall document the reason why a higher purity could not be obtained.

5.3.1 Neat chemical standards shall be kept refrigerated when not being used in the preparation of standard solutions. Proper storage of neat chemicals is essential in order to safeguard them from decomposition.

5.3.2 The purity of a compound can sometimes be misrepresented by a chemical supply house. Since knowledge of purity is needed to calculate the concentration of solute in a solution standard, it is the Contractor's responsibility to have analytical documentation ascertaining that the purity of each compound is correctly stated. Use of two or more independent methods is recommended.

5.4 Documentation of the Verification and Preparation of Chemical Standards. It is the responsibility of the Contractor to maintain the necessary documentation to show that the chemical standards they have used in the performance of REAP analyses conform to the requirements previously listed.

6.0 REGIONAL DATA REVIEW

6.1 In order to verify the usability of data for the intended purpose, EPA Region IX reviews data from the perspective of the end user, based upon functional aspects of data quality. Guidelines for data review have been developed by EPA Region IX. EPA Region IX uses these guidelines as the basis for data evaluation. The Region may augment the basic guideline review process with additional review based on site specific concerns. Regional reviews, like the sites under investigation, vary based on the nature of the problems under investigation and the appropriate response to the specific circumstances.

6.2 Regional data reviews, relating usability of the data to a specific site are part of the collective assessment process that includes review of contractual discrepancies and Contractor and method performance. These evaluations are integrated into a collective review and may be used to take appropriate action to correct deficiencies in the Contractor's performance.

7.0 PERFORMANCE EVALUATION (PE) SAMPLES

7.1 Although intralaboratory QC may demonstrate Contractor and method performance that may be tracked over time, an external performance evaluation program is an essential feature of a QA program. As a means of measuring Contractor and method performance, Contractors participate in interlaboratory comparison studies conducted by the Agency. Results from the analysis of these performance evaluation (PE) samples will be used by the Agency to verify the Contractor's continuing ability to produce acceptable analytical data. The results are also used to assess the precision and accuracy of the analytical methods for specific analytes.

7.2 PE samples may be provided to participating Contractors as frequently as on an SDG-by-SDG basis as a recognizable QC sample of known composition, as a recognizable QC sample of unknown composition, or not recognizable as a QC material. The performance evaluation samples will be sent by the Region or its sampling Contractors. The results of all such quality control samples may be used as the basis for rejection of data for: sample(s) within an SDG, a fraction within an SDG or the entire SDG; and/or may be used as the basis for contract action. The Contractor shall analyze the samples and return the data package and all raw data within the contract required turnaround time.

7.3 At a minimum, the results are evaluated for compound identification, quantitation, and sample contamination. Confidence intervals for the quantitation of target compounds are based on reported values using population statistics. The Agency may adjust the scores on any given performance evaluation sample to compensate for unanticipated difficulties with a particular sample. Normally, a fraction of the compounds spiked into the sample are not specifically listed in the contract. Contractor is required to use the most current version of NIST/EPA/NIH and/or Wiley, or equivalent, mass spectral library to tentatively identify a maximum number of non-target compounds in each fraction that are present above a minimal response. Tentative identification of these compounds is evaluated and integrated into the evaluation process.

7.4 A Contractor's results on the performance evaluation samples will determine the Contractor's performance as follows.

7.4.1 Acceptable, No Response Required (Score greater than or equal to 90%): Data meets most or all of the scoring criteria.

7.4.2 Acceptable, Response Explaining Deficiency(ies) Required (Score greater than or equal to 75% but less than 90%): Deficiencies exist in the Contractor's performance.

7.4.3 Unacceptable Performance, Response Explaining Deficiency(ies) Required (Score less than 75%): Deficiencies exist in the Contractor's performance to the extent that the EPA has determined that the Contractor has not demonstrated the capability to meet the contract requirements.

7.5 In the case of Sections 7.4.2 and 7.4.3, reference Section 2.9 above.

8.0 GC/MS TAPE AUDITS

8.1 Overview. Periodically, the Agency may request GC/MS magnetic tapes from Contractors for a specific Case in order to accomplish tape audits. Generally, tape submissions and audits are requested for the following reasons.

- Program overview
- Indication of data quality problems from a Regional data review
- Support for on-site audits
- Specific Regional requests

8.1.1 Depending upon the reason for an audit, the tapes from a recent Case, a specific Case, or a performance evaluation sample may be requested. Tape audits provide a mechanism to assess adherence to contractual requirements and to ensure the consistency of the hardcopy data reported with that generated on the GC/MS tapes. This function provides external monitoring of Program QC requirements and checks adherence of the Contractor to internal QA procedures. In addition, tape audits enable the Agency to evaluate the utility, precision, and accuracy of the analytical methods.

8.1.2 The Contractor shall store <u>all</u> raw and processed GC/MS data on magnetic tape, in appropriate instrument manufacturer's format. This tape shall include data for samples, blanks, matrix spikes, matrix spike duplicates, laboratory control samples, initial calibrations, initial calibration verifications, continuing calibrations, and instrument performance checks (BFB and DFTPP), as well as all Contractor-generated spectral libraries and quantitation reports required to generate the data package. The Contractor shall maintain a written reference logbook of tape files of the EPA sample number, calibration data, standards, blanks, matrix spikes, and matrix spike duplicates. The logbook shall include EPA sample numbers and standard and blank IDs, identified by Case and Sample Delivery Group.

8.1.3 The Contractor is required to retain the GC/MS tapes for a period of one year after submission of the reconciled Complete SDG File.

8.1.4 When submitting GC/MS tapes to the Agency, the following materials shall be delivered in response to the request.

8.1.4.1 All associated raw data files for samples, including performance evaluation samples, blanks, matrix spikes, matrix spike duplicates, initial calibration standards, initial calibration verification standards, continuing calibration standards, and instrument performance check solutions (BFB and DFTPP).

8.1.4.2 All processed data files and quantitation output files associated with the raw data files described in Section 8.1.4.1.

8.1.4.3 All associated identifications and calculation files used to generate the data submitted in the data package.

8.1.4.4 All Contractor-generated mass spectral library files (NIST/EPA/NIH and/or Wiley, or equivalent, library <u>not</u> required).

8.1.4.5 A copy of the Contractor's written reference logbook relating tape files to EPA sample number, calibration data, standards, blanks, matrix spikes, and matrix spike duplicates. The logbook shall include EPA sample numbers and lab file identifiers for all samples, blanks, and standards, identified by Case and Sample Delivery Group.

8.1.4.6 A directory of files on each tape.

8.1.4.7 A copy of the completed sample data package.

8.1.4.8 A statement attesting to the completeness of the GC/MS data tape submission, signed and dated by the Contractor's laboratory manager. The Contractor shall also provide a statement attesting that the data reported have not been altered in any way. These statements shall be part of a cover sheet that includes the following information relevant to the data tape submission:

- Contractor name
- Date of submission
- Case number
- SDG number
- GC/MS make and model number
- Software version
- Disk drive type (e.g., CDC, PRIAM, etc.)
- File transfer method (e.g., DSD, DTD, FTP, Aquarius, etc.)
- Names and telephone numbers of two Contractor contacts for further information regarding the submission

8.2 Submission of the GC/MS Tape. Upon request of the EPA, the Contractor shall send the required GC/MS tapes and all necessary documentation to the designated recipient within seven (7) calendar days of notification.

8.3 Responding to the GC/MS Tape Audit Report. If performance deficiencies are found, after completion of the GC/MS tape audit, reference Section 2.9 above.

9.0 DATA PACKAGE AUDITS

9.1 Overview. Data package audits are performed by U.S. EPA for program overview and specific concerns to assess the technical quality of the data and evaluate overall Contractor performance. They provide the Agency with an in-depth inspection and evaluation of the Case data package with regard to achieving QA/QC acceptability. Data packages are periodically selected from recently received Cases. They are evaluated for the technical quality of hardcopy raw data, quality assurance, and adherence to contractual requirements. A thorough review of the raw data is completed, including: a check of instrument printouts, quantitation reports, chromatograms, spectra, library searches and other documentation for deviations from the contractual requirements, a check for transcription and calculation errors, a review of the qualifications of the Contractor personnel involved with the Case, and a review of all current SOPs on file. Standardized procedures have been established to assure uniformity of the auditing process.

9.2 Responding to the Data Package Audit Report. If performance deficiencies are found as a result of the data package audit report, reference Section 2.9 above.

10.0 ON-SITE LABORATORY EVALUATIONS

10.1 Overview. EPA reserves the right to conduct an on-site laboratory evaluation, as needed. On-site laboratory evaluations are carried out to monitor the Contractor's ability to meet the requirements, terms and conditions specified in the contract. The evaluation process incorporates two separate categories: a quality assurance evaluation and an evidentiary audit. EPA will notify the contractor in advance of an on-site laboratory evaluation, and will conduct the audit at reasonable times.

10.2 Quality Assurance On-Site Evaluation. Quality assurance evaluators inspect the Contractor's facilities to verify the adequacy and maintenance of instrumentation, the continuity of personnel meeting experience or education requirements, and the acceptable performance of analytical and QC procedures.

10.2.1 The Contractor shall expect that items to be monitored will include, but not be limited to, the following items:

- Quantity, age, availability, scheduled maintenance and performance of instrumentation;
- Availability, appropriateness, and utilization of the LQAP and SOPs;
- Staff qualifications and experience, and personnel training programs;
- Reagents, standards, and sample storage facilities;
- Standard preparation logbooks and raw data;
- Bench sheets and analytical logbook maintenance and review; and
- Review of the Contractor's sample analysis/data package inspection/data management procedures.

10.2.2 Prior to an on-site evaluation, various documentation pertaining to performance of the Contractor is integrated in a profile package for discussion during the evaluation. Items that may be included are previous on-site reports, performance evaluation sample scores, Regional review of data, Regional QA materials, GC/MS tape audit reports, data audit reports, and data trend reports.

10.3 Evidentiary Audit. Evidence auditors conduct an on-site laboratory evaluation to determine if Contractor policies and procedures are in place to satisfy evidence handling requirements as stated in Attachment 4. The evidence audit comprises a procedural audit, an audit of written SOPs, and an audit of analytical project file documentation.

10.3.1 Procedural Audit of the SOPs. The SOPs audit consists of review and examination of the written SOPs to determine if the procedures they describe are actually being implemented and followed by the Contractor for the following operations: sample receiving, sample storage, sample identification, sample security, sample tracking (from receipt to completion of analysis) and analytical project file organization and assembly.

10.3.2 Analytical Project File Evidence Audit. The analytical project file evidence audit consists of review and examination of the analytical project file documentation. The auditors review the files to determine:

- The accuracy of the document inventory;
- The completeness of the file;
- The adequacy and accuracy of the document numbering system;
- Traceability of sample activity;
- Identification of activity recorded on the documents; and
- Error correction methods.

10.3 Discussion of the On-Site Team's Findings. During the debriefing, the auditors present their findings and recommendations for necessary corrective actions to the Contractor’s personnel.

10.4 Corrective Action Reports for Follow-Through to Quality Assurance and Evidentiary Audit Reports. If defiencies are found following an on-site laboratory evaluation, reference Section 2.9.

11.0 DATA MANAGEMENT

The Contractor shall perform the activities described below:

11.1 Data management procedures are defined as procedures specifying the acquisition or entry, update, correction, deletion, storage and security of computer-readable data and files. These procedures shall be in written form and contain a clear description of all databases and files used to generate or resubmit deliverables. Key areas of concern include system organization (including personnel and security), documentation operations, traceability and quality control.

11.2 Data manually entered from hardcopy shall be subject to quality control and the error rates estimated. Systems shall prevent entry of incorrect or out-of-range data and alert data entry personnel of errors. In addition, data entry error rates shall be estimated and recorded on a monthly basis by reentering a

statistical sample of the data entered and calculating discrepancy rates by data element.

11.3 The record of changes in the form of corrections and updates to data originally generated, submitted, and/or resubmitted shall be documented to allow traceability of updates. Documentation shall include the following for each change.

- Justification or rationale for the change.
- Initials of the person making the change(s). Data changes shall be implemented and reviewed by a person or group independent of the source generating the deliverable.
- Documentation of changes shall be retained according to the schedule of the original deliverable.
- Resubmitted deliverables shall be reinspected as a part of the Contractor's internal inspection process prior to resubmission. The entire deliverable, not just the changes, shall be inspected.
- The Contractor's laboratory manager shall approve changes to originally submitted deliverables.
- Documentation of data changes may be requested by EPA auditors.

11.4 Individual(s) responsible for the following functions shall be identified.

- System operation and maintenance, including documentation and training,
- Database integrity, including data entry, data updating and quality control, and
- Data and system security, backup and archiving.

ATTACHMENT 4

EVIDENTIARY SOPs
(CHAIN-OF-CUSTODY AND DOCUMENT CONTROL PROCEDURES)

Attachment 4 - Chain-of-Custody and Document Control

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1.0 INTRODUCTION

1.1 A sample is physical evidence collected from a facility or from the environment. Controlling evidence is an essential part of any investigation effort. To ensure that the Environmental Protection Agency's (EPA) sample data and records supporting sample-related activities are admissible and have weight as evidence in future litigation, Contractors are required to maintain EPA samples under chain-of-custody and to account for all samples and supporting records of sample handling, preparation, and analysis. The Contractor shall maintain sample identity, sample custody, and all sample-related records according to the requirements in this Attachment.

1.2 The purposes of the evidence requirements include:

- Ensuring traceability of samples while in the possession of the Contractor.
- Ensuring custody of samples while in the possession of the Contractor.
- Ensuring the integrity of sample identity while in the possession of the Contractor.
- Ensuring that sample-related activities are recorded on documents or in other formats for EPA sample receipt, storage, preparation, analysis, and disposal.
- Ensuring that all laboratory records for each specified sample delivery group will be accounted for when the project is completed.
- Ensuring that all laboratory records directly related to EPA samples are assembled and delivered to EPA or, prior to delivery, are available upon EPA's request.

2.0 CHAIN-OF-CUSTODY AND DOCUMENT CONTROL PROCEDURES

The Contractor shall implement the following procedures for sample receiving, sample identification, sample security, sample storage, sample tracking and document control, computer-resident sample data control, and complete sample delivery group file organization and assembly to ensure accountability of EPA sample chain-of-custody, as well as control of all EPA sample-related records. The Contractor shall either furnish their existing written SOPs, <u>if</u> they specifically address the requirements below, as these requirements relate specifically to EPA’s Statement of Work for Contract No.--------, **or**, the Contractor shall develop and implement written SOPs to address the requirements below. (See Attachment 3.)

2.1 SAMPLE RECEIVING

2.1.1 The Contractor shall designate a sample custodian responsible for receiving EPA samples.

2.1.2 The Contractor shall designate a representative to receive EPA samples in the event that the sample custodian is not available.

2.1.3 Upon receipt, the condition of shipping coolers and sample containers shall be inspected and recorded on Form DC-1 by the sample custodian or his/her representative.

2.1.4 Upon receipt, the condition of the custody seals (intact/broken) shall be inspected and recorded on Form DC-1 by the sample custodian or his/her representative.

2.1.5 The sample custodian or his/her representative shall verify and record on Form DC-1 the presence or absence of the following documents accompanying the sample shipment:

- Custody seals
- Chain-of-custody records/packing lists
- Airbills or airbill stickers

2.1.6 The sample custodian or his/her representative shall verify and record on Form DC-1 the agreement or disagreement of information recorded on all documents received with samples and information recorded on sample containers.

2.1.7 The sample custodian or his/her representative shall record the following information on Form DC-1 as samples are received and inspected:

- Custody seal numbers, when present
- Airbill or airbill sticker numbers
- Cooler temperature
- Date of receipt
- Time of receipt
- EPA sample numbers
- Assigned laboratory numbers
- Samples delivered by hand
- Problems and discrepancies

2.1.8 The sample custodian or his/her representative shall sign, date, and record the time on all accompanying forms, when applicable, at the time of sample receipt (for example, chain-of-custody records, traffic reports or packing lists, and airbills). Note: Initials are not acceptable.

2.1.9 The Contractor shall contact the PO to resolve problems and discrepancies including but not limited to, absent documents, conflicting information, absent or broken custody seals, and unsatisfactory sample condition (for example, leaking sample container).

2.1.10 The Contractor shall record the resolution of problems and discrepancies discussed with the EPA.

2.2 SAMPLE IDENTIFICATION

2.2.1 The Contractor shall maintain the identity of EPA samples and prepared samples (including extracted samples, digested samples, and distilled samples) throughout the preparation and analytical process.

2.2.2 Each sample and sample preparation container shall be labeled with the EPA number or a unique laboratory sample identification number.

2.2.3 The identify of EPA samples and prepared samples shall be maintained throughout the preparation and analytical process:

2.2.3.1 When the Contractor assigns unique laboratory sample identification numbers, the written SOPs shall include a description of the procedure used to assign these numbers.

2.2.3.2 When the Contractor uses prefixes or suffixes in addition to laboratory sample identification numbers, the written SOPs shall include their definitions.

2.2.3.3 When the Contractor uses methods to uniquely identify fractions/parameter groups and matrix type, the written SOPs shall include a description of these methods.

2.3 SAMPLE SECURITY

2.3.1 The Contractor shall demonstrate that EPA sample custody is maintained from receiving through retention or disposal. A sample is in custody if:

- It is in your possession; or
- It is in your view after being in your possession; or
- It is locked in a secure area after being in your possession; or
- It is in a designated secure area. (Secure areas shall be accessible only to authorized personnel.)

2.3.2 The Contractor shall ensure the following requirements and information are included in the written procedures for sample security:

2.3.2.1 Ensuring that sample custody is maintained.

2.3.2.2 Ensuring the security of designated areas is maintained.

2.3.2.3 A list of authorized personnel who have access to locked storage areas.

2.4 SAMPLE STORAGE AND DISPOSAL

2.4.1 The Contractor shall designate storage areas for EPA samples and prepared samples.

2.4.2 The Contractor shall retain all remaining samples and extracts for a minimum of 3 months from the time of acceptance of the final data package by EPA.

2.4.3 The Contractor shall dispose of any remaining samples and extracts in accordance with local, State and Federal regulations.

2.5 SAMPLE TRACKING AND DOCUMENT CONTROL

2.5.1 The Contractor shall record all activities performed on EPA samples.

2.5.2 Titles which identify the activities recorded shall be printed on each page of all laboratory documents. (Activities include, but are not limited to, sample receipt, sample storage, sample preparation, and sample analysis.) When a document is a record of analysis, the instrument type and parameter group (for example, GC/MS-VOA) shall be included in the title.

2.5.3 When columns are used to organize information recorded on laboratory documents, the information recorded in the columns shall be identified in a column heading.

2.5.4 Reviewers' signatures shall be identified on laboratory documents when reviews are conducted. Note: Individuals recording review comments on computer-generated raw data are not required to be identified unless the written comments address data validity.

2.5.5 The laboratory name shall be identified on preprinted laboratory documents.

2.5.6 Each laboratory document entry shall be dated with the month/day/year (for example, 01/01/00) and signed (or initialed) by the individual(s) responsible for performing the recorded activity at the time the activity is recorded.

2.5.7 Notations on laboratory documents shall be recorded in ink.

2.5.8 Corrections to laboratory documents and raw data shall be made by drawing a single line through the error and entering the correct information. Information shall not be obliterated or rendered unreadable. Corrections and additions to information shall be signed (or initialed) and dated.

2.5.9 Unused portions of laboratory documents shall be lined-out and initialed.

2.5.10 Pages in bound and unbound logbooks shall be sequentially numbered.

2.5.11 Instrument-specific run logs shall be maintained to enable the reconstruction of run sequences.

2.5.12 Logbook entries shall be in chronological order.

2.5.13 Information inserted into laboratory documents shall be affixed permanently in place. The individual responsible for inserting information shall sign and date across the insert and logbook page at the time information is inserted.

2.5.14 The Contractor shall document disposal or retention of EPA samples, remaining portions of samples, and prepared samples.

2.5.15 The SOP for Sample Tracking and Document Control shall contain Examples of all laboratory documents used during sample receiving, sample storage, sample transfer, sample analyses, CSF organization and assembly, and sample retention or disposal.

2.6 COMPUTER-RESIDENT SAMPLE DATA CONTROL

2.6.1 Contractor personnel responsible for original data entry shall be identified at the time of data input.

2.6.1.2 The written SOP for Computer-Resident Sample Data Control shall include a list of authorized personnel who have access to electronic data collection system functions and to archived data.

2.6.2 The Contractor shall make changes to electronic data in a manner which ensures that the original data entry is preserved, the editor is identified, and the revision date is recorded.

2.6.3 The Contractor shall routinely verify the accuracy of manually entered data, electronically entered data, and data acquired from instruments.

2.6.4 The Contractor shall routinely verify documents produced by the electronic data collection system to ensure accuracy of the information reported.

2.6.5 The Contractor shall ensure that the electronic data collection system is secure.

2.6.5.1 The electronic data collection system shall be maintained in a secure location.

2.6.5.2 Access to the electronic data collection system functions shall be limited to authorized personnel through utilization of software security techniques (for example, log-ons or restricted passwords).

2.6.5.3 Electronic data collection systems shall be protected from the introduction of external programs or software (for example, viruses).

2.6.6 The Contractor shall designate archive storage areas for electronic data and the software required to access the data.

2.6.7 The Contractor shall designate an individual responsible for maintaining archives of electronic data including the software.

2.6.8 The Contractor shall maintain the archives of electronic data and necessary software in a secure location. (Secure areas shall be accessible only to authorized personnel.)

2.7 COMPLETE SAMPLE DELIVERY GROUP FILE (CSF) ORGANIZATION AND ASSEMBLY

2.7.1 In the written SOP for this section, the Contractor shall include a list of authorized personnel who have access to electronic data and the software required to access the data archives.

2.7.2 The Contractor shall designate a document control officer responsible for the organization and assembly of the CSF.

2.7.2.1 The Contractor shall designate a representative responsible for the organization and assembly of the CSF in the event that the document control officer is not available.

2.7.3 The Contractor shall maintain documents relating to the CSF in a secure location and ensure that all documents relevant to each SDG are included in the CSF. The Contractor shall ensure that copies are referenced to originals in the event that an original document contains information relating to more than one SDG.

2.7.4 All original laboratory forms and copies of SDG-related logbook pages shall be included in the CSF.

2.7.5 Copies of laboratory documents in the CSF shall be photocopied in a manner to provide complete and legible replicates.

2.7.6 Documents relevant to each SDG including, but not limited to, the following shall be included in the CSF:

- logbook pages
- benchsheets
- mass spectra
- chromatograms
- screening records
- preparation records
- re-preparation records
- analytical records
- re-analysis records
- records of failed or attempted analysis
- custody records
- sample tracking records
- raw data summaries
- computer printouts
- correspondence
- FAX originals
- library search results
- other

2.7.7 CSF documents shall be organized and assembled on an SDG-specific basis.

2.7.8 Original documents which include information relating to more than one SDG (for example, chain-of-custody records, traffic reports, calibration logs) shall be filed in the CSF of the lowest SDG number, and copies of these originals shall be placed in the other CSF(s). The document control officer or his/her representative shall record the following statement on the copies in dark ink:

COPY

ORIGINAL DOCUMENTS ARE INCLUDED IN CSF _____

_____
Signature

_____
Date

2.7.9 All CSFs shall be submitted with a completed Form DC-2. All resubmitted CSFs shall be submitted with a new or revised Form DC-2.

2.7.10 Each item in the CSF and resubmitted CSFs shall be inventoried and assembled in the order specified on Form DC-2. Each page of the CSF shall be stamped with a sequential number. Page number ranges shall be recorded in the columns provided on Form DC-2. Intentional gaps in the page numbering sequence shall be recorded in the "Comments" section on Form DC-2. When inserting new or inadvertently omitted documents, the Contractor shall identify them with unique accountable numbers. The unique accountable numbers and the locations of the documents shall be recorded in the "Other Records" section on Form DC-2.

2.7.11 Before shipping each CSF, the document control officer or his/her representative shall verify the agreement of information recorded on all documentation and ensure that the information is consistent and the CSF is complete.

2.7.12 The document control officer or his/her representative shall document the shipment of deliverable packages including what was sent, to whom, the date, and the carrier used, which will be available upon request by the EPA PO or CO.

2.7.13 Shipments of deliverable packages, including resubmittals, shall be sealed with custody seals by the document control officer or his/her representative in a manner such that opening the packages would break the seals.

2.7.14 Custody seals shall be signed and dated by the document control officer or his/her representative when sealing deliverable packages.

2.8 OTHER

As a point of clarification for Sections 2.1.1, 2.6.7, 2.7.1, and 2.7.2, above: EPA is expecting that the *functions* mentioned in each one of these sections, e.g. sample custodian, archives maintainer, document control officer and backup, be provided for by the Contractor; however, the position title, the number of people to cover the function, etc, is up to the Contractor, and the performance of those functions shall be within the approved fixed unit prices.

1A-1
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: (not decanted) _____ Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
75-71-8	Dichlorodifluoromethane		
74-87-3	Chloromethane		
75-01-4	Vinyl Chloride		
74-83-9	Bromomethane		
75-00-3	Chloroethane		
75-69-4	Trichlorofluoromethane		
75-35-4	1,1-Dichloroethene		
67-64-1	Acetone		
75-15-0	Carbon Disulfide		
75-09-2	Methylene Chloride		
156-60-5	trans-1,2-Dichloroethene		
75-34-3	1,1-Dichloroethane		
590-20-7	2,2-Dichloropropane		
78-93-3	2-Butanone		
156-59-4	cis-1,2-Dichloroethene		
67-66-3	Chloroform		
74-97-5	Bromochloromethane		
71-55-6	1,1,1-Trichloroethane		
563-58-6	1,1-Dichloropropene		
56-23-5	Carbon Tetrachloride		
71-43-2	Benzene		
107-06-2	1,2-Dichloroethane		
79-01-6	Trichloroethene		
78-87-5	1,2-Dichloropropane		
75-27-4	Bromodichloromethane		
74-95-3	Dibromomethane		
108-10-1	4-Methyl-2-Pentanone		
10061-02-6	trans-1,3-Dichloropropene		
108-88-3	Toluene		
10061-01-5	cis-1,3-Dichloropropene		
124-48-1	Dibromochloromethane		
79-00-5	1,1,2-Trichloroethane		
591-78-6	2-Hexanone		

FORM I VOA-1

1A-2
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: (not decanted) _____ Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
127-18-4	Tetrachloroethene		
123-91-1	1,4-Dioxane		
109-99-9	Tetrahydrofuran		
142-28-9	1,3-Dichloropropane		
124-48-1	Dibromochloromethane		
75-25-2	Bromoform		
98-82-8	Isopropylbenzene		
106-93-4	1,2-Dibromoethane		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
630-20-6	1,1,1,2-Tetrachloroethane		
79-34-5	1,1,2,2-Tetrachloroethane		
1330-20-7	Xylene (total)		
100-42-5	Styrene		
108-86-1	Bromobenzene		
103-65-1	N-Propylbenzene		
96-18-4	1,2,3-Trichloropropane		
95-49-8	2-Chlorotoluene		
108-67-8	1,3,5-Trimethylbenzene		
106-43-4	4-Chlorotoluene		
98-06-6	tert-Butylbenzene		
95-63-6	1,2,4-Trimethylbenzene		
135-98-8	sec-Butylbenzene		
99-87-6	4-Isopropyltoluene		
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
104-51-8	N-Butylbenzene		
95-50-1	1,2-Dichlorobenzene		
96-12-8	1,2-Dibromo-3-Chloropropane		
120-82-1	1,2,4-Trichlorobenzene		
87-68-3	Hexachlorobutadiene		
91-20-3	Naphthalene		
87-61-6	1,2,3-Trichlorobenzene		

FORM I VOA-2

1A-3
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: (not decanted) _____ Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

Dilution Factor: _____

Number TICs found: _____

CONCENTRATION UNITS:
(ug/L or ug/Kg)_____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

FORM I VOA-TIC

1B-1

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:_____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) Dilution Factor: _____

GPC Cleanup: (Y/N)___ pH:____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
108-95-2	Phenol		
111-44-4	bis(2-Chloroethyl)ether		
95-57-8	2-Chlorophenol		
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
95-50-1	1,2-Dichlorobenzene		
95-48-7	2-Methylphenol		
108-60-1	2,2'-oxybis(1-Chloropropane)		
106-44-5	4-Methylphenol		
621-64-7	N-Nitroso-di-n-propylamine		
67-72-1	Hexachloroethane		
98-95-3	Nitrobenzene		
78-59-1	Isophorone		
88-75-5	2-Nitrophenol		
105-67-9	2,4-Dimethylphenol		
111-91-1	bis(2-Chloroethoxy)methane		
120-83-2	2,4-Dichlorophenol		
120-82-1	1,2,4-Trichlorobenzene		
91-20-3	Naphthalene		
106-47-8	4-Chloroaniline		
87-68-3	Hexachlorobutadiene		
59-50-7	4-Chloro-3-methylphenol		
91-57-6	2-Methylnaphthalene		
77-47-4	Hexachlorocyclopentadiene		
88-06-2	2,4,6-Trichlorophenol		
95-95-4	2,4,5-Trichlorophenol		
91-58-7	2-Chloronaphthalene		
88-74-4	2-Nitroaniline		
131-11-3	Dimethylphthalate		
208-96-8	Acenaphthylene		
606-20-2	2,6-Dinitrotoluene		
99-09-2	3-Nitroaniline		
83-32-9	Acenaphthene		

FORM I SV-1

1B-2
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:_____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) Dilution Factor: _____

GPC Cleanup: (Y/N)___ pH:____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
51-28-5	2,4-Dinitrophenol		
100-02-7	4-Nitrophenol		
132-64-9	Dibenzofuran		
121-14-2	2,4-Dinitrotoluene		
84-66-2	Diethylphthalate		
7005-72-3	4-Chlorophenyl-phenylether		
86-73-7	Fluorene		
100-01-6	4-Nitroaniline		
534-52-1	4,6-Dinitro-2-methylphenol		
86-30-6	N-Nitrosodiphenylamine (1)		
101-55-3	4-Bromophenyl-phenylether		
118-74-1	Hexachlorobenzene		
87-86-5	Pentachlorophenol		
85-01-8	Phenanthrene		
120-12-7	Anthracene		
86-74-8	Carbazole		
84-74-2	Di-n-butylphthalate		
206-44-0	Fluoranthene		
129-00-0	Pyrene		
85-68-7	Butylbenzylphthalate		
91-94-1	3,3'-Dichlorobenzidine		
56-55-3	Benzo(a)anthracene		
218-01-9	Chrysene		
117-81-7	bis(2-Ethylhexyl)phthalate		
103-23-1	Di(2-ethylhexyl)adipate		
117-84-0	Di-n-octylphthalate		
205-99-2	Benzo(b)fluoranthene		
207-08-9	Benzo(k)fluoranthene		
50-32-8	Benzo(a)pyrene		
193-39-5	Indeno(1,2,3-cd)pyrene		
53-70-3	Dibenz(a,h)anthracene		
191-24-2	Benzo(g,h,i)perylene		

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

1B-3
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

Level: (low/med) _____ Date Received: _____

% Moisture: _____ decanted: (Y/N)___ Date Extracted:_____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) Dilution Factor: _____

GPC Cleanup: (Y/N)___ pH:____

Number TICs found: _____ CONCENTRATION UNITS: (ug/L or ug/Kg)_____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

FORM I SV-TIC

1C
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) Dilution Factor: _____

GPC Cleanup: (Y/N)___ pH:____ Sulfur Cleanup: (Y/N) ___

Aroclor Acid Cleanup: (Y/N)___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
319-84-6	alpha-BHC		
319-85-7	beta-BHC		
319-86-8	delta-BHC		
58-89-9	gamma-BHC (Lindane)		
76-44-8	Heptachlor		
309-00-2	Aldrin		
1024-57-3	Heptachlor epoxide		
959-98-8	Endosulfan I		
60-57-1	Dieldrin		
72-55-9	4,4'-DDE		
72-20-8	Endrin		
33213-65-9	Endosulfan II		
72-54-8	4,4'-DDD		
1031-07-8	Endosulfan sulfate		
50-29-3	4,4'-DDT		
72-43-5	Methoxychlor		
53494-70-5	Endrin ketone		
7421-93-4	Endrin aldehyde		
5103-71-9	alpha-Chlordane		
5103-74-2	gamma-Chlordane		
8001-35-2	Toxaphene		
12674-11-2	Aroclor-1016		
11104-28-2	Aroclor-1221		
11141-16-5	Aroclor-1232		
53469-21-9	Aroclor-1242		
12672-29-6	Aroclor-1248		
11097-69-1	Aroclor-1254		
11096-82-5	Aroclor-1260		
37324-23-5	Aroclor-1262		
11100-14-4	Aroclor-1268		

FORM I PEST

1D-1
MODIFIED 524.2 VOLATILE ORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: water Lab Sample ID: _____

Sample volume: _____(mL) Lab File ID: _____

Dilution Factor: _____ Date Received: _____
Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

CAS NO.	COMPOUND	CONCENTRATION: (ug/L)	Q
75-71-8	Dichlorodifluoromethane		
74-87-3	Chloromethane		
75-01-4	Vinyl Chloride		
74-83-9	Bromomethane		
75-00-3	Chloroethane		
75-69-4	Trichlorofluoromethane		
75-35-4	1,1-Dichloroethene		
67-64-1	Acetone		
75-15-0	Carbon Disulfide		
75-09-2	Methylene Chloride		
156-60-5	trans-1,2-Dichloroethene		
75-34-3	1,1-Dichloroethane		
590-20-7	2,2-Dichloropropane		
78-93-3	2-Butanone		
156-59-4	cis-1,2-Dichloroethene		
67-66-3	Chloroform		
74-97-5	Bromochloromethane		
71-55-6	1,1,1-Trichloroethane		
563-58-6	1,1-Dichloropropene		
56-23-5	Carbon Tetrachloride		
71-43-2	Benzene		
107-06-2	1,2-Dichloroethane		
79-01-6	Trichloroethene		
78-87-5	1,2-Dichloropropane		
75-27-4	Bromodichloromethane		
74-95-3	Dibromomethane		
108-10-1	4-Methyl-2-Pentanone		
10061-02-6	trans-1,3-Dichloropropene		
108-88-3	Toluene		
10061-01-5	cis-1,3-Dichloropropene		
124-48-1	Dibromochloromethane		
79-00-5	1,1,2-Trichloroethane		
591-78-6	2-Hexanone		

FORM I 524.2-1

1D-2
MODIFIED 524.2 VOLATILE ORGANICS
ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: water Lab Sample ID: _____

Sample volume: _____(mL) Lab File ID: _____

Dilution Factor: _____ Date Received: _____
Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

CAS NO.	COMPOUND	CONCENTRATION: (ug/L)	Q
127-18-4	Tetrachloroethene		
123-91-1	1,4-Dioxane		
109-99-9	Tetrahydrofuran		
142-28-9	1,3-Dichloropropane		
124-48-1	Dibromochloromethane		
75-25-2	Bromoform		
98-82-8	Isopropylbenzene		
106-93-4	1,2-Dibromoethane		
108-90-7	Chlorobenzene		
100-41-4	Ethylbenzene		
630-20-6	1,1,1,2-Tetrachloroethane		
79-34-5	1,1,2,2-Tetrachloroethane		
1330-20-7	Xylene (total)		
100-42-5	Styrene		
108-86-1	Bromobenzene		
103-65-1	N-Propylbenzene		
96-18-4	1,2,3-Trichloropropane		
95-49-8	2-Chlorotoluene		
108-67-8	1,3,5-Trimethylbenzene		
106-43-4	4-Chlorotoluene		
98-06-6	tert-Butylbenzene		
95-63-6	1,2,4-Trimethylbenzene		
135-98-8	sec-Butylbenzene		
99-87-6	4-Isopropyltoluene		
541-73-1	1,3-Dichlorobenzene		
106-46-7	1,4-Dichlorobenzene		
104-51-8	N-Butylbenzene		
95-50-1	1,2-Dichlorobenzene		
96-12-8	1,2-Dibromo-3-Chloropropane		
120-82-1	1,2,4-Trichlorobenzene		
87-68-3	Hexachlorobutadiene		
91-20-3	Naphthalene		
87-61-6	1,2,3-Trichlorobenzene		

FORM I 524.2-2

1D-3
MODIFIED 524.2 VOLATILE ORGANICS
ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: water Lab Sample ID: _____

Sample volume: _____(mL) Lab File ID: _____

Dilution Factor: _____ Date Received: _____
Date Analyzed: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

Number TICs found: _____

CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (ug/L)	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				

FORM I 524.2-TIC

1E
AROCLOR ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) _____ Date Extracted:_____

Concentrated Extract Volume: _____(uL) Date Analyzed: _____

Injection Volume: _____(uL) Dilution Factor: _____

Sulfur Cleanup: (Y/N) ___ pH:____

Acid Cleanup: (Y/N)___

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
12674-11-2	Aroclor-1016		
11104-28-2	Aroclor-1221		
11141-16-5	Aroclor-1232		
53469-21-9	Aroclor-1242		
12672-29-6	Aroclor-1248		
11097-69-1	Aroclor-1254		
11096-82-5	Aroclor-1260		
37324-23-5	Aroclor-1262		
11100-14-4	Aroclor-1268		

FORM I PCB

1F
WATER SOLUBLE ORGANICS - GC/NPD
ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

% Moisture: (not decanted) _____ Date Received: _____

Soil Extraction Volume: _____(mL) Date Prep/Extracted:_____

Injection Volume: _____(uL) Date Analyzed: _____

Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
68-12-2	N,N-Dimethylformamide		
75-05-8	Acetonitrile		
51-79-6	Urethane		
623-78-9	Ethylurethane		
107-13-1	Acrylonitrile		

FORM I WSO/NPD

1G
WATER SOLUBLE ORGANICS - GC/FID
ANALYSIS DATA SHEET

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix: (water/soil/waste) _____ Lab Sample ID: _____

Sample wt/vol: _____(g/mL)____ Lab File ID: _____

% Moisture: (not decanted) _____ Date Received: _____

Soil Extraction Volume: _____(mL) Date Prep/Extracted:_____

Injection Volume: _____(uL) Date Analyzed: _____

Dilution Factor: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg)_____	Q
109-86-4--------	2-Methoxyethanol		
60-29-7---------	Diethyl Ether		
67-56-1---------	Methanol		
64-17-5---------	Ethanol		
71-23-8---------	N-Propanol		
107-21-1--------	Ethylene Glycol		
57-55-6---------	Propylene Glycol		
123-91-1--------	1,4-Dioxane		
67-68-5---------	Dimethyl Sulfoxide		

FORM I WSO/FID

2A-1
WATER - VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SMC1 (DCE) #	SMC2 (DCB) #	OTHER	TOT OUT
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	QC LIMITS
SMC1 (DCE) = 1,2-Dichloroethane-d4	(80-120)
SMC2 (DCB) = 1,2-Dichlorobenzene-d4	(80-120)

Column to be used to flag recovery values
* Values outside of contract required QC limits

page __ of __

FORM II VOA-1

2A-2
SOIL - VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Level:(low/med) _____ Matrix (soil/waste)_____

	EPA SAMPLE NO.	SMC1 (DCE) #	SMC2 (DCB) #	OTHER	TOT OUT
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	QC LIMITS
SMC1 (DCE) = 1,2-Dichloroethane-d4	(80-120)
SMC2 (DCB) = 1,2-Dichlorobenzene-d4	(80-120)

Column to be used to flag recovery values
* Values outside of contract required QC limits

page __ of __

FORM II VOA-2

2B-1
WATER - SEMIVOLATILE SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS	
S1 (NBZ) = Nitrobenzene-d5	(35-114)	
S2 (FBP) = 2-Fluorobiphenyl	(43-116)	
S3 (TPH) = Terphenyl-d14	(33-141)	
S4 (PHL) = Phenol-d5	(10-110)	
S5 (2FP) = 2-Fluorophenol	(21-110)	
S6 (TBP) = 2,4,6-Tribromophenol	(10-123)	
S7 (2CP) = 2-Chlorophenol-d4	(33-110)	(advisory)
S8 (DCB) = 1,2-Dichlorobenzene-d4	(16-110)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

page __ of __

FORM II SV-1

2B-2
SOIL - SEMIVOLATILE SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Level:(low/med)_____ Matrix (soil/waste)_____

	EPA SAMPLE NO.	S1 (NBZ)#	S2 (FBP)#	S3 (TPH)#	S4 (PHL)#	S5 (2FP)#	S6 (TBP)#	S7 (2CP)#	S8 (DCB)#	TOT OUT
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										

	QC LIMITS	
S1 (NBZ) = Nitrobenzene-d5	(23-120)	
S2 (FBP) = 2-Fluorobiphenyl	(30-115)	
S3 (TPH) = Terphenyl-d14	(18-137)	
S4 (PHL) = Phenol-d5	(24-113)	
S5 (2FP) = 2-Fluorophenol	(25-121)	
S6 (TBP) = 2,4,6-Tribromophenol	(19-122)	
S7 (2CP) = 2-Chlorophenol-d4	(20-130)	(advisory)
S8 (DCB) = 1,2-Dichlorobenzene-d4	(20-130)	(advisory)

Column to be used to flag recovery values
* Values outside of contract required QC limits
D Surrogate diluted out

page __ of __

FORM II SV-2

2C-1
WATER - PESTICIDE SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II PEST-1

2C-2
SOIL - PESTICIDE SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix (soil/waste)_____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

QC LIMITS
TCX = Tetrachloro-m-xylene (30-150)
DCB = Decachlorobiphenyl (30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II PEST-2

2D
WATER - MODIFIED 524.2 VOLATILE
SYSTEM MONITORING COMPOUND RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

	EPA SAMPLE NO.	SMC1 (DCE) #	SMC2 (DCB) #	OTHER	TOT OUT
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

	QC LIMITS
SMC1 (DCE) = 1,2-Dichloroethane-d4	(80-120)
SMC2 (DCB) = 1,2-Dichlorobenzene-d4	(80-120)

Column to be used to flag recovery values
* Values outside of contract required QC limits

page __ of __

FORM II 524.2

2E-1
WATER - AROCLOR SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II PCB-1

2E-2
SOIL - AROCLOR SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix (soil/waste)_____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	TCX 1 %REC #	TCX 2 %REC #	DCB 1 %REC #	DCB 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

	QC LIMITS
TCX = Tetrachloro-m-xylene	(30-150)
DCB = Decachlorobiphenyl	(30-150)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II PCB-2

2F-1
WATER - WATER SOLUBLE ORGANICS - GC/NPD
SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	DMA 1 %REC #	DMA 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

DMA = N,N-Dimethylacetamide

QC LIMITS
(70-130)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II WSO/NPD-1

2F-2
SOIL - WATER SOLUBLE ORGANICS - GC/NPD
SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Sample Matrix (soil/waste)_____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	DMA 1 %REC #	DMA 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS

DMA = N,N-Dimethylacetamide (70-130)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II WSO/NPD-2

2G-1
WATER - WATER SOLUBLE ORGANICS - GC/FID
SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	2EE 1 %REC #	2EE 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

2EE = 2-Ethoxyethanol

QC LIMITS
(70-130)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II WSO/FID-1

2G-2
SOIL - WATER SOLUBLE ORGANICS - GC/FID
SURROGATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Sample Matrix (soil/waste)_____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

	EPA SAMPLE NO.	2EE 1 %REC #	2EE 2 %REC #	OTHER (1)	OTHER (2)	TOT OUT
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS
2EE = 2-Ethoxyethanol (70-130)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

page __ of __

FORM II WSO/FID-2

3A-1
WATER - VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Vinyl chloride					80-120
1,2-Dichloroethane					80-120
Carbon tetrachloride					80-120
1,2-Dichloropropane					80-120
Trichloroethene					80-120
1,1,2-Trichloroethane					80-120
Benzene					80-120
cis-1,3-Dichloropropene					80-120
Bromoform					80-120
Tetrachloroethene					80-120
1,2-Dibromoethane					80-120
1,4-Dichlorobenzene					80-120
2-Hexanone					80-120
Tetrahydrofuran					80-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Vinyl chloride					25	80-120
1,2-Dichloroethane					25	80-120
Carbon tetrachloride					25	80-120
1,2-Dichloropropane					25	80-120
Trichloroethene					25	80-120
1,1,2-Trichloroethane					25	80-120
Benzene					25	80-120
cis-1,3-Dichloropropene					25	80-120
Bromoform					25	80-120
Tetrachloroethene					25	80-120
1,2-Dibromoethane					25	80-120
1,4-Dichlorobenzene					25	80-120
2-Hexanone					25	80-120
Tetrahydrofuran					25	80-120

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____
_____

FORM III VOA-1

3A-2

SOIL - VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Level:(low/med) _____ Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC. LIMITS REC.
Vinyl chloride					80-120
1,2-Dichloroethane					80-120
Carbon tetrachloride					80-120
1,2-Dichloropropane					80-120
Trichloroethene					80-120
1,1,2-Trichloroethane					80-120
Benzene					80-120
cis-1,3-Dichloropropene					80-120
Bromoform					80-120
Tetrachloroethene					80-120
1,2-Dibromoethane					80-120
1,4-Dichlorobenzene					80-120
2-Hexanone					80-120
Tetrahydrofuran					80-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Vinyl chloride					25	80-120
1,2-Dichloroethane					25	80-120
Carbon tetrachloride					25	80-120
1,2-Dichloropropane					25	80-120
Trichloroethene					25	80-120
1,1,2-Trichloroethane					25	80-120
Benzene					25	80-120
cis-1,3-Dichloropropene					25	80-120
Bromoform					25	80-120
Tetrachloroethene					25	80-120
1,2-Dibromoethane					25	80-120
1,4-Dichlorobenzene					25	80-120
2-Hexanone					25	80-120
Tetrahydrofuran					25	80-120

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____

_____

FORM III VOA-2

3B-1
WATER - SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Phenol					12-110
2-Chlorophenol					27-123
1,4-Dichlorobenzene					36- 97
N-Nitroso-di-n-prop.(1)					41-116
1,2,4-Trichlorobenzene					39- 98
4-Chloro-3-methylphenol					23- 97
Acenaphthene					46-118
4-Nitrophenol					10- 80
2,4-Dinitrotoluene					24- 96
Pentachlorophenol					9-103
Pyrene					26-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol					42	12-110
2-Chlorophenol					40	27-123
1,4-Dichlorobenzene					28	36- 97
N-Nitroso-di-n-prop.(1)					38	41-116
1,2,4-Trichlorobenzene					28	39- 98
4-Chloro-3-methylphenol					42	23- 97
Acenaphthene					31	46-118
4-Nitrophenol					50	10- 80
2,4-Dinitrotoluene					38	24- 96
Pentachlorophenol					50	9-103
Pyrene					31	26-127

(1) N-Nitroso-di-n-propylamine

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____

FORM III SV-1

3B-2
SOIL - SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Level:(low/med) _____ Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Phenol					26- 90
2-Chlorophenol					25-102
1,4-Dichlorobenzene					28-104
N-Nitroso-di-n-prop.(1)					41-126
1,2,4-Trichlorobenzene					38-107
4-Chloro-3-methylphenol					26-103
Acenaphthene					31-137
4-Nitrophenol					11-114
2,4-Dinitrotoluene					28- 89
Pentachlorophenol					17-109
Pyrene					35-142

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Phenol					35	26- 90
2-Chlorophenol					50	25-102
1,4-Dichlorobenzene					27	28-104
N-Nitroso-di-n-prop.(1)					38	41-126
1,2,4-Trichlorobenzene					23	38-107
4-Chloro-3-methylphenol					33	26-103
Acenaphthene					19	31-137
4-Nitrophenol					50	11-114
2,4-Dinitrotoluene					47	28- 89
Pentachlorophenol					47	17-109
Pyrene					36	35-142

(1) N-Nitroso-di-n-propylamine

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____

FORM III SV-2

3C-1
WATER - PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
gamma-BHC (Lindane)					56-123
Heptachlor					40-131
Aldrin					40-120
Dieldrin					52-126
Endrin					56-121
4,4'-DDT					38-127

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)					15	56-123
Heptachlor					20	40-131
Aldrin					22	40-120
Dieldrin					18	52-126
Endrin					21	56-121
4,4'-DDT					27	38-127

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____
_____

FORM III PEST-1

3C-2

SOIL - PESTICIDE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
gamma-BHC (Lindane)____	_____	_____	_____	_____	46-127
Heptachlor_____	_____	_____	_____	_____	35-130
Aldrin_____	_____	_____	_____	_____	34-132
Dieldrin_____	_____	_____	_____	_____	31-134
Endrin_____	_____	_____	_____	_____	42-139
4,4'-DDT_____	_____	_____	_____	_____	23-134

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
gamma-BHC (Lindane)____	_____	_____	_____	_____	50	46-127
Heptachlor_____	_____	_____	_____	_____	31	35-130
Aldrin_____	_____	_____	_____	_____	43	34-132
Dieldrin_____	_____	_____	_____	_____	38	31-134
Endrin_____	_____	_____	_____	_____	45	42-139
4,4'-DDT_____	_____	_____	_____	_____	50	23-134

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____
_____

FORM III PEST-2

3D
WATER - MODIFIED 524.2 VOLATILE
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Vinyl chloride					80-120
1,2-Dichloroethane					80-120
Carbon tetrachloride					80-120
1,2-Dichloropropane					80-120
Trichloroethene					80-120
1,1,2-Trichloroethane					80-120
Benzene					80-120
cis-1,3-Dichloropropene					80-120
Bromoform					80-120
Tetrachloroethene					80-120
1,2-Dibromoethane					80-120
1,4-Dichlorobenzene					80-120
2-Hexanone					80-120
Tetrahydrofuran					80-120

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Vinyl chloride					20	80-120
1,2-Dichloroethane					20	80-120
Carbon tetrachloride					20	80-120
1,2-Dichloropropane					20	80-120
Trichloroethene					20	80-120
1,1,2-Trichloroethane					20	80-120
Benzene					20	80-120
cis-1,3-Dichloropropene					20	80-120
Bromoform					20	80-120
Tetrachloroethene					20	80-120
1,2-Dibromoethane					20	80-120
1,4-Dichlorobenzene					20	80-120
2-Hexanone					20	80-120
Tetrahydrofuran					20	80-120

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

RPD:_____ out of _____ outside limits

Spike Recovery:_____ out of _____ outside limits

COMMENTS: _____

_____

FORM III 524.2

3E-1
WATER - AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Aroclor 1254					50-150
Other:					50-150

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	RPD # (%)	QC LIMITS RPD	QC LIMITS REC.
Aroclor1254					25	50-150
Other:					25	50-150

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____
_____

FORM III PCB-1

3E-2
SOIL - AROCLOR MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
Aroclor1254 _____	_____	_____	_____	_____	50-150
Other: _____	_____	_____	_____	_____	50-150

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	RPD # (%)	QC LIMITS RPD	QC LIMITS REC.
Aroclor1254_____	_____	_____	_____	_____	40	50-150
Other:_____	_____	_____	_____	_____	40	50-150

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____
_____

FORM III PCB-2

3F-1
WATER - WATER SOLUBLE ORGANICS - GC/NPD
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC. LIMITS REC.
N,N-Dimethylformamide					60-140
Acetonitrile					60-140
Other:					60-140
Other:					60-140

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	RPD (%)	QC LIMITS RPD	QC LIMITS REC.
N,N-Dimethylformamide					30	60-140
Acetonitrile					30	60-140
Other:					30	60-140
Other:					30	60-140

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____

FORM III WSO/NPD-1

3F-2
SOIL - WATER SOLUBLE ORGANICS - GC/NPD
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC. LIMITS REC.
N,N-Dimethylformamide__	_____	_____	_____	_____	60-140
Acetonitrile_____	_____	_____	_____	_____	60-140
Other:_____	_____	_____	_____	_____	60-140
Other:_____	_____	_____	_____	_____	60-140

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	RPD (%)	QC LIMITS RPD	QC LIMITS REC.
N,N-Dimethylformamide__	_____	_____	_____	_____	30	60-140
Acetonitrile_____	_____	_____	_____	_____	30	60-140
Other:_____	_____	_____	_____	_____	30	60-140
Other:_____	_____	_____	_____	_____	30	60-140

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____
_____

FORM III WSO/NPD-2

3G-1
WATER - WATER SOLUBLE ORGANICS - GC/FID
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

COMPOUND	SPIKE ADDED (mg/L)	SAMPLE CONCENTRATION (mg/L)	MS CONCENTRATION (mg/L)	MS % REC	QC. LIMITS REC.
2-Methoxyethanol_____	_____	_____	_____	_____	60-140
n-Propanol_____	_____	_____	_____	_____	60-140
Ethylene Glycol_____	_____	_____	_____	_____	60-140
Other:_____	_____	_____	_____	_____	60-140
Other:_____	_____	_____	_____	_____	60-140
Other:_____	_____	_____	_____	_____	60-140

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	RPD (%)	QC LIMITS RPD	QC LIMITS REC.
2-Methoxyethanol_____	_____	_____	_____	_____	30	60-140
n-Propanol_____	_____	_____	_____	_____	30	60-140
Ethylene Glycol_____	_____	_____	_____	_____	30	60-140
Other:_____	_____	_____	_____	_____	30	60-140
Other:_____	_____	_____	_____	_____	30	60-140
Other:_____	_____	_____	_____	_____	30	60-140

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____
_____

FORM III WSO/FID-1

3G-2
SOIL - WATER SOLUBLE ORGANICS - GC/FID
MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Matrix Spike - EPA Sample No.: _____

Matrix (soil/waste)_____

COMPOUND	SPIKE ADDED (mg/Kg)	SAMPLE CONCENTRATION (mg/Kg)	MS CONCENTRATION (mg/Kg)	MS % REC	QC. LIMITS REC.
2-Methoxyethanol					60-140
n-Propanol					60-140
Ethylene Glycol					60-140
Other:					60-140
Other:					60-140
Other:					60-140

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	RPD (%)	QC LIMITS RPD	QC LIMITS REC.
2-Methoxyethanol					30	60-140
n-Propanol					30	60-140
Ethylene Glycol					30	60-140
Other:					30	60-140
Other:					30	60-140
Other:					30	60-140

Column to be used to flag % Recovery and RPD values with an asterisk
* Values outside of QC limits

COMMENTS: _____
_____

FORM III WSO/FID-2

4A

EPA SAMPLE NO.

VOLATILE METHOD BLANK SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Date Analyzed: _____ Time Analyzed: _____

Instrument ID: _____ Heated Purge: (Y/N) ___

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
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26				
27				
28				
29				
30				

COMMENTS: _____

_____

page __ of __

FORM IV VOA

4B
SEMIVOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Instrument ID: _____ Date Extracted:_____

Matrix: (water/soil/waste) _____ Date Analyzed: _____

Level:(low/med) _____ Time Analyzed: _____

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
1				
2				
3				
4				
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8				
9				
10				
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COMMENTS: _____

_____

page __ of __

FORM IV SV

4C

EPA SAMPLE NO.

PESTICIDE METHOD BLANK SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Matrix: (water/soil/waste) _____ Sulfur Cleanup: (Y/N) _____

GPC Cleanup: _____ Aroclor Acid Cleanup: (Y/N) _____

Extraction:(SepF/Cont/Sonc) _____ Date Extracted: _____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column (1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column (2): _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
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22				
23				
24				
25				
26				

COMMENTS: _____

_____

page __ of __ FORM IV PEST

4D
MODIFIED 524.2 VOLATILE
METHOD BLANK SUMMARY

EPA SAMPLE NO.
_____
|_____|

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Date Analyzed: _____ Time Analyzed: _____

Instrument ID: _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
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30				

COMMENTS: _____

page __ of __

FORM IV 524.2

4E

EPA SAMPLE NO.

AROCLOR METHOD BLANK SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Matrix: (water/soil/waste) _____ Sulfur Cleanup: (Y/N) _____

Extraction:(SepF/Cont/Sonc) _____ Date Extracted: _____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column (1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column (2): _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
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22				
23				
24				
25				
26				

COMMENTS: _____

_____

page __ of __

FORM IV PCB

4F
WATER SOLUBLE ORGANICS - GC/NPD
METHOD BLANK SUMMARY

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Matrix: (water/soil/waste) _____ Date Prep/Extracted: _____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column (1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column (2): _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
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25				
26				

COMMENTS: _____

_____

page __ of __

FORM IV WSO/NPD

4G
WATER SOLUBLE ORGANICS - GC/FID
METHOD BLANK SUMMARY

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID: _____ Lab File ID: _____

Matrix: (water/soil/waste) _____ Date Prep/Extracted: _____

Date Analyzed (1): _____ Date Analyzed (2): _____

Time Analyzed (1): _____ Time Analyzed (2): _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column (1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column (2): _____ ID: _____(m) _____(mm) _____(µm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
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25				
26				

COMMENTS: _____

_____

page __ of __

FORM IV WSO/FID

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID: _____ BFB Injection Date:_____

Instrument ID: _____ BFB Injection Time:_____

Heated Purge: (Y/N) ___

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	
75	30.0 - 66.0% of mass 95	
95	Base peak, 100% relative abundance	
96	5.0 - 9.0% of mass 95	
173	Less than 2.0% of mass 174	( )1
174	50.0 - 120.0% of mass 95	
175	4.0 - 9.0 % of mass 174	( )1
176	93.0 - 101.0% of mass 174	( )1
177	5.0 - 9.0% of mass 176	( )2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1					
2					
3					
4					
5					
6					
7					
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page __ of __

FORM V VOA

5B
SEMIVOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
DECAFLUOROTRIPHENYLPHOSPHINE (DFTPP)

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID: _____ DFTPP Injection Date:_____

Instrument ID: _____ DFTPP Injection Time:_____

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
51	30.0 - 80.0% of mass 198	
68	Less than 2.0% of mass 69	( )1
69	Mass 69 relative abundance	
70	Less than 2.0% of mass 69	( )1
127	25.0 - 75.0% of mass 198	
197	Less than 1.0% of mass 198	
198	Base Peak, 100% relative abundance	
199	5.0 to 9.0% of mass 198	
275	10.0 - 30.0% of mass 198	
365	Greater than 0.75% of mass 198	
441	Present, but less than mass 443	
442	40.0 - 110.0% of mass 198	
443	15.0 - 24.0% of mass 442	( )2

1-Value is % mass 69 2-Value is % mass 442

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1					
2					
3					
4					
5					
6					
7					
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FORM V SV

5D
MODIFIED 524.2 VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID: _____ BFB Injection Date:_____

Instrument ID: _____ BFB Injection Time:_____

GC Column: _____ ID: _____(m)_____(mm) _____(µm)

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95_____	_____
75	30.0 - 66.0% of mass 95_____	_____
95	Base peak, 100% relative abundance_____	_____
96	5.0 - 9.0% of mass 95_____	_____
173	Less than 2.0% of mass 174_____	_____( )1
174	50.0 - 120.0% of mass 95_____	_____
175	4.0 - 9.0 % of mass 174_____	_____( )1
176	93.0 - 101.0% of mass 174_____	_____( )1
177	5.0 - 9.0% of mass 176_____	_____( )2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
1					
2					
3					
4					
5					
6					
7					
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21					
22					

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FORM V 524.2

6A-1
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Heated Purge: (Y/N) ___ Calibration Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

LAB FILE ID: RRF10 =_____ RRF20 =_____
RRF50 =_____ RRF100=_____ RRF200=_____

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	___ RRF	% RSD
Dichlorodifluoromethane							
Chloromethane							
Vinyl Chloride							
Bromomethane							
Chloroethane							
Trichlorofluoromethane							
1,1-Dichloroethene							
Acetone							
Carbon Disulfide							
Methylene Chloride							
trans-1,2-Dichloroethene							
1,1-Dichloroethane							
2,2-Dichloropropane							
2-Butanone							
cis-1,2-Dichloroethene							
Chloroform							
Bromochloromethane							
1,1,1-Trichloroethane							
1,1-Dichloropropene							
Carbon Tetrachloride							
Benzene							
1,2-Dichloroethane							
Trichloroethene							
1,2-Dichloropropane							
Bromodichloromethane							
Dibromomethane							
4-Methyl-2-Pentanone							
trans-1,3-Dichloropropene							
Toluene							
cis-1,3-Dichloropropene							
1,1,2-Trichloroethane							
2-Hexanone							

FORM VI VOA-1

6A-2
VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Heated Purge: (Y/N) ___ Calibration Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

LAB FILE ID: RRF10 =_____ RRF20 =_____
RRF50 =_____ RRF100=_____ RRF200=_____

COMPOUND	RRF10	RRF20	RRF50	RRF100	RRF200	$\overline{RRF}$	% RSD
Tetrachloroethene							
1,4-Dioxane							
Tetrahydrofuran							
1,3-Dichloropropane							
Dibromochloromethane							
Bromoform							
Isopropylbenzene							
1,2-Dibromoethane							
Chlorobenzene							
Ethylbenzene							
1,1,1,2-Tetrachloroethane							
1,1,2,2-Tetrachloroethane							
Xylene (total)							
Styrene							
Bromobenzene							
N-Propylbenzene							
1,2,3-Trichloropropane							
2-Chlorotoluene							
1,3,5-Trimethylbenzene							
4-Chlorotoluene							
tert-Butylbenzene							
1,2,4-Trimethylbenzene							
sec-Butylbenzene							
4-Isopropyltoluene							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
N-Butylbenzene							
1,2-Dichlorobenzene							
1,2-Dibromo-3-Chloropropane							
1,2,4-Trichlorobenzene							
Hexachlorobutadiene							
Naphthalene							
1,2,3-trichlorobenzene							
1,2-Dichlorobenzene-d4							
1,2-Dichloroethane-d4							

FORM VI VOA-2

6B-1
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Calibration Times: _____ _____

LAB FILE ID: RRF20 =_____ RRF50 =_____
RRF80 =_____ RRF120=_____ RRF160=_____

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	___ RRF	% RSD
Phenol							
bis(2-Chloroethyl)ether							
2-Chlorophenol							
1,3-Dichlorobenzene							
1,4-Dichlorobenzene							
1,2-Dichlorobenzene							
2-Methylphenol							
2,2'-oxybis(1-Chloropropane)							
4-Methylphenol							
N-Nitroso-di-n-propylamine							
Hexachloroethane							
Nitrobenzene							
Isophorone							
2-Nitrophenol							
2,4-Dimethylphenol							
bis(2-Chloroethoxy)methane							
2,4-Dichlorophenol							
1,2,4-Trichlorobenzene							
Naphthalene							
4-Chloroaniline							
Hexachlorobutadiene							
4-Chloro-3-methylphenol							
2-Methylnaphthalene							
Hexachlorocyclopentadiene							
2,4,6-Trichlorophenol							
2,4,5-Trichlorophenol							
2-Chloronaphthalene							
2-Nitroaniline							
Dimethylphthalate							
Acenaphthylene							
2,6-Dinitrotoluene							
3-Nitroaniline							
Acenaphthene							
2,4-Dinitrophenol							
4-Nitrophenol							
Dibenzofuran							
2,4-Dinitrotoluene							

FORM VI SV-1

6B-2
SEMIVOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Calibration Times: _____ _____

LAB FILE ID: RRF20 =_____ RRF50 =_____
RRF80 =_____ RRF120=_____ RRF160=_____

COMPOUND	RRF20	RRF50	RRF80	RRF120	RRF160	___ RRF	% RSD
Diethylphthalate							
4-Chlorophenyl-phenylether							
Fluorene							
4-Nitroaniline							
4,6-Dinitro-2-methylphenol							
N-Nitrosodiphenylamine (1)							
4-Bromophenyl-phenylether							
Hexachlorobenzene							
Pentachlorophenol							
Phenanthrene							
Anthracene							
Carbazole							
Di-n-butylphthalate							
Fluoranthene							
Pyrene							
Butylbenzylphthalate							
3,3'-Dichlorobenzidine							
Benzo(a)anthracene							
Chrysene							
bis(2-Ethylhexyl)phthalate							
Di-n-octylphthalate							
Benzo(b)fluoranthene							
Benzo(k)fluoranthene							
Benzo(a)pyrene							
Indeno(1,2,3-cd)pyrene							
Dibenz(a,h)anthracene							
Benzo(g,h,i)perylene							
Nitrobenzene-d5							
2-Fluorobiphenyl							
Terphenyl-d14							
Phenol-d5							
2-Fluorophenol							
2,4,6-Tribromophenol							
2-Chlorophenol-d4							
1,2-Dichlorobenzene-d4							

(1) Cannot be separated from Diphenylamine

FORM VI SV-2

6C-1
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

Level (x low): low _____ mid _____ high _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Lab File ID: Individual Mix A Individual Mix B

Low _____ Low _____
Mid _____ Mid _____
High _____ High _____

COMPOUND	RT OF STANDARDS LOW	MID	HIGH	MEAN RT	RT WINDOW FROM	TO
alpha-BHC						
beta-BHC						
delta-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Aldrin						
Heptachlor epoxide						
Endosulfan I						
Dieldrin						
4,4'-DDE						
Endrin						
Endosulfan II						
4,4'-DDD						
Endosulfan sulfate						
4,4'-DDT						
Methoxychlor						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

* Surrogate retention times are measured from Standard Mix A analyses.

Retention time windows are ±0.05 minutes for all compounds that elute before Heptachlor epoxide, ±0.07 minutes for all other compounds, except ±0.10 minutes for Decachlorobiphenyl.

FORM VI PEST-1

6C-2
PESTICIDE INITIAL CALIBRATION OF SINGLE COMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

Level (x low): low _____ mid _____ high _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Lab File ID: Individual Mix A Individual Mix B

Low _____ Low _____
Mid _____ Mid _____
High _____ High _____

COMPOUND	CALIBRATION FACTORS LOW	MID	HIGH	MEAN	%RSD
alpha-BHC					
beta-BHC					
delta-BHC					
gamma-BHC (Lindane)					
Heptachlor					
Aldrin					
Heptachlor epoxide					
Endosulfan I					
Dieldrin					
4,4'-DDE					
Endrin					
Endosulfan II					
4,4'-DDD					
Endosulfan sulfate					
4,4'-DDT					
Methoxychlor					
Endrin ketone					
Endrin aldehyde					
alpha-Chlordane					
gamma-Chlordane					
Tetrachloro-m-xylene					
Decachlorobiphenyl					

* Surrogate calibration factors are measured from Standard Mix A analyses.

FORM VI PEST-2

6C-3
PESTICIDE INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	AMOUNT (ng)	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR
Toxaphene		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1016		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1221		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1232		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1242		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1248		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1254		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				
Aroclor 1260		*1				
		*2				
Lab File ID: _____		*3				
		4				
		5				

* Denotes required peaks

FORM VI PEST-3

6C-4
PESTICIDE INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	AMOUNT (ng)	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CALIBRATION FACTOR
Aroclor 1262	_____	*1	_____	_____	_____	_____
		*2	_____	_____	_____	_____
Lab File ID: _____		*3	_____	_____	_____	_____
		4	_____	_____	_____	_____
		5	_____	_____	_____	_____
Aroclor 1068	_____	*1	_____	_____	_____	_____
		*2	_____	_____	_____	_____
Lab File ID: _____		*3	_____	_____	_____	_____
		4	_____	_____	_____	_____
		5	_____	_____	_____	_____

* Denotes required peaks

FORM VI PEST-4

6C-5
PESTICIDE ANALYTE RESOLUTION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID (1): _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			

FORM VI PEST-5

6C-6
PERFORMANCE EVALUATION MIXTURE (PEM)

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID: _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			

FORM VI PEST-6

6C-7
INDIVIDUAL STANDARD MIXTURE A

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID: _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

FORM VI PEST-7

6C-8
INDIVIDUAL STANDARD MIXTURE B

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID: _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			

FORM VI PEST-8

6D-1
MODIFIED 524.2 VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Calibration Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

LAB FILE ID: RRF 2 =_____ RRF 5 =_____
RRF 10 =_____ RRF 25 =_____ RRF 50 =_____

	COMPOUND	RRF 2	RRF 5	RRF 10	RRF 25	RRF 50	___ RRF	% RSD
	Dichlorodifluoromethane							
	Chloromethane							
	Vinyl Chloride							
	Bromomethane							
	Chloroethane							
	Trichlorofluoromethane							
	1,1-Dichloroethene							
#	Acetone							
	Carbon Disulfide							
	Methylene Chloride							
	trans-1,2-Dichloroethene							
	1,1-Dichloroethane							
	2,2-Dichloropropane							
#	2-Butanone							
	cis-1,2-Dichloroethene							
	Chloroform							
	Bromochloromethane							
	1,1,1-Trichloroethane							
	1,1-Dichloropropene							
	Carbon Tetrachloride							
	Benzene							
	1,2-Dichloroethane							
	Trichloroethene							
	1,2-Dichloropropane							
	Bromodichloromethane							
	Dibromomethane							
#	4-Methyl-2-Pentanone							
	trans-1,3-Dichloropropene							
	Toluene							
	cis-1,3-Dichloropropene							
	1,1,2-Trichloroethane							
#	2-Hexanone							

= Alternate Initial Calibration Series = 5.0, 10, 25, 50, 100 µg/L.

FORM VI 524.2-1

6D-2
MODIFIED 524.2 VOLATILE ORGANICS INITIAL CALIBRATION DATA

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date(s):_____ _____

Calibration Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

LAB FILE ID: RRF 2 =_____ RRF 5 =_____
RRF 10 =_____ RRF 25 =_____ RRF 50 =_____

	COMPOUND	RRF 2	RRF 5	RRF 10	RRF 25	RRF 50	___ RRF	% RSD
	Tetrachloroethene							
+	1,4-Dioxane							
+	Tetrahydrofuran							
	1,3-Dichloropropane							
	Dibromochloromethane							
	Bromoform							
	Isopropylbenzene							
	1,2-Dibromoethane							
	Chlorobenzene							
	Ethylbenzene							
	1,1,1,2-Tetrachloroethane							
	1,1,2,2-Tetrachloroethane							
	Xylene (total)							
	Styrene							
	Bromobenzene							
	N-Propylbenzene							
	1,2,3-Trichloropropane							
	2-Chlorotoluene							
	1,3,5-Trimethylbenzene							
	4-Chlorotoluene							
	tert-Butylbenzene							
	1,2,4-Trimethylbenzene							
	sec-Butylbenzene							
	4-Isopropyltoluene							
	1,3-Dichlorobenzene							
	1,4-Dichlorobenzene							
	N-Butylbenzene							
	1,2-Dichlorobenzene							
	1,2-Dibromo-3-Chloropropane							
	1,2,4-Trichlorobenzene							
	Hexachlorobutadiene							
	Naphthalene							
	1,2,3-trichlorobenzene							
	1,2-Dichloroethane-d4							
	1,2-Dichlorobenzene-d4							

+ = Altenate Initial Calibration Series = 50, 100, 250, 500, 1000 µg/L.

FORM VI 524.2-2

6E-1
AROCLOR INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Level (x low): low _____ mid _____ high _____

COMPOUND Lab File IDs	PEAK	RT OF STANDARDS LOW	MID	HIGH	MEAN STD RT	RT WINDOW FROM	TO
Aroclor 1016	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1221	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1232	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1242	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1248	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1254	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1260	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1262	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Aroclor 1268	*1						
Low	*2						
Mid	*3						
High	4						
	5						
Tetrachloro-m-xylene	*						
Decachlorobiphenyl	*						

* = Denotes required peaks

FORM VI PCB-1

6E-2
AROCLOR INITIAL CALIBRATION OF MULTICOMPONENT ANALYTES

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Level (x low): low _____ mid _____ high _____

Concentration Units: (ug/L)

COMPOUND	PEAK	LOW STD CONC.	CALIBRATION FACTORS (CF) LOW	MID	HIGH	MEAN CF	%RSD
Aroclor 1016	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1221	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1232	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1242	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1248	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1254	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1260	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1262	*1						
	*2						
	*3						
	4						
	5						
Aroclor 1268	*1						
	*2						
	*3						
	4						
	5						
Tetrachloro-m-xylene	*						
Decachlorobiphenyl	*						

* = Denotes required peaks

FORM VI PCB-2

6E-3
AROCLOR MID POINT STANDARD RESOLUTION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

	PEAK	RT	RESOLUTION LEFT (%)	RESOLUTION RIGHT (%)
Aroclor 1016	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1221	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1232	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1242	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1248	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1254	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1260	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1262	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			
Aroclor 1268	*1			
	*2			
Lab File ID: _____	*3			
	4			
	5			

* = Denotes required peaks

FORM VI PCB-3

6F-1
WATER SOLUBLE ORGANICS - GC/NPD
INITIAL CALIBRATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Level (x low): low _____ mid _____ high _____

Lab File ID: Low =_____ Mid =_____ High =_____

COMPOUND	RT OF STANDARDS LOW	MID	HIGH	MEAN STD RT	RT WINDOW FROM	TO
N,N-Dimethyformamide__						
Acetonitrile_____						
Urethane_____						
Ethylurethane_____						
Acrylontrile_____						
N,N-Dimethylacetamide_						

Concentration Units: (ug/L)

COMPOUND	LOW STD CONC.	CALIBRATION FACTORS (CF) LOW	MID	HIGH	MEAN CF	%RSD
N,N-Dimethylformamide__						
Acetonitrile_____						
Urethane_____						
Ethylurethane_____						
Acrylonitrile_____						
N,N-Dimethylacetamide__						

FORM VI WSO/NPD-1

6F-2
WATER SOLUBLE ORGANICS - GC/NPD
MID POINT STANDARD RESOLUTION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID: _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

FORM VI WSO/NPD-2

6G-1
WATER SOLUBLE ORGANICS - GC/FID
INITIAL CALIBRATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Date(s) Analyzed: _____ _____

Level (x low): low _____ mid _____ high _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

Level (x low): low _____ mid _____ high _____

Lab File ID: Low =_____ Mid =_____ High =_____

COMPOUND	RT OF STANDARDS LOW	MID	HIGH	MEAN STD RT	RT WINDOW FROM	TO
2-Methoxyethanol						
Diethyl Ether						
Methanol						
Ethanol						
N-Propanol						
Ethylene Glycol						
Propylene Glycol						
1,4-Dioxane						
Dimethyl Sulfoxide						
2-Ethoxyethanol						

Concentration Units: (mg/L)

COMPOUND	LOW STD CONC.	CALIBRATION FACTORS (CF) LOW	MID	HIGH	MEAN CF	%RSD
2-Methoxyethanol						
Diethyl Ether						
Methanol						
Ethanol						
N-Propanol						
Ethylene Glycol						
Propylene Glycol						
1,4-Dioxane						
Dimethyl Sufoxide						
2-Ethoxyethanol						

FORM VI WSO/FID-1

6G-2
WATER SOLUBLE ORGANICS - GC/FID
MID POINT STANDARD RESOLUTION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID (1): _____ EPA Sample No. (Standard 1): _____

Lab File ID: _____ Lab Sample ID (1): _____

Date Analyzed (1): _____ Time Analyzed (1): _____

GC Column (1): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Instrument ID (2): _____ EPA Sample No. (Standard 2): _____

Lab File ID: _____ Lab Sample ID (2): _____

Date Analyzed (2): _____ Time Analyzed (2): _____

GC Column (2): _____ ID:_____(m) _____(mm) _____(µm)

	ANALYTE	RT	RESOLUTION (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

FORM VI WSO/FID-2

7A-1
VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Heated Purge: (Y/N) ___ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	___ RRF	RRF50	MIN RRF	%D	MAX %D
Dichlorodifluoromethane			0.050		30.0
Chloromethane			0.050		30.0
Vinyl Chloride			0.050		30.0
Bromomethane			0.050		30.0
Chloroethane			0.050		30.0
Trichlorofluoromethane			0.050		30.0
1,1-Dichloroethene			0.050		30.0
Acetone			0.020		30.0
Carbon Disulfide			0.050		30.0
Methylene Chloride			0.050		30.0
trans-1,2-Dichloroethene			0.050		30.0
1,1-Dichloroethane			0.050		30.0
2,2-Dichloropropane			0.050		30.0
2-Butanone			0.020		30.0
cis-1,2-Dichloroethene			0.050		30.0
Chloroform			0.050		30.0
Bromochloromethane			0.020		30.0
1,1,1-Trichloroethane			0.050		30.0
1,1-Dichloropropene			0.050		30.0
Carbon Tetrachloride			0.050		30.0
Benzene			0.050		30.0
1,2-Dichloroethane			0.050		30.0
Trichloroethene			0.050		30.0
1,2-Dichloropropane			0.050		30.0
Bromodichloromethane			0.050		30.0
Dibromomethane			0.020		30.0
4-Methyl-2-Pentanone			0.020		30.0
trans-1,3-Dichloropropene			0.050		30.0
Toluene			0.050		30.0
cis-1,3-Dichloropropene			0.050		30.0
1,1,2-Trichloroethane			0.050		30.0
2-Hexanone			0.020		30.0

FORM VII VOA-1

7A-2
VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Heated Purge: (Y/N) ___ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Tetrachloroethene			0.050		30.0
1,4-Dioxane			0.010		30.0
Tetrahydrofuran			0.020		30.0
1,3-Dichloropropane			0.050		30.0
Dibromochloromethane			0.020		30.0
Bromoform			0.020		30.0
Isopropylbenzene			0.050		30.0
1,2-Dibromoethane			0.020		30.0
Chlorobenzene			0.050		30.0
Ethylbenzene			0.050		30.0
1,1,1,2-Tetrachloroethane			0.050		30.0
1,1,2,2-Tetrachloroethane			0.050		30.0
Xylene (total)			0.050		30.0
Styrene			0.050		30.0
Bromobenzene			0.050		30.0
N-Propylbenzene			0.050		30.0
1,2,3-Trichloropropane			0.050		30.0
2-Chlorotoluene			0.050		30.0
1,3,5-Trimethylbenzene			0.050		30.0
4-Chlorotoluene			0.050		30.0
tert-Butylbenzene			0.050		30.0
1,2,4-Trimethylbenzene			0.050		30.0
sec-Butylbenzene			0.050		30.0
4-Isopropyltoluene			0.050		30.0
1,3-Dichlorobenzene			0.050		30.0
1,4-Dichlorobenzene			0.050		30.0
N-Butylbenzene			0.050		30.0
1,2-Dichlorobenzene			0.050		30.0
1,2-Dibromo-3-Chloropropane			0.020		30.0
1,2,4-Trichlorobenzene			0.050		30.0
Hexachlorobutadiene			0.050		30.0
Naphthalene			0.050		30.0
1,2,3-trichlorobenzene			0.050		30.0
1,2-Dichloroethane-d4			0.010		30.0
1,2-Dichlorobenzene-d4			0.010		30.0

FORM VII VOA-2

7B-1
SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Phenol			0.800		30.0
bis(2-Chloroethyl)ether			0.700		30.0
2-Chlorophenol			0.800		30.0
1,3-Dichlorobenzene			0.600		30.0
1,4-Dichlorobenzene			0.500		30.0
1,2-Dichlorobenzene			0.400		30.0
2-Methylphenol			0.700		30.0
2,2'-oxybis(1-Chloropropane)			0.010		30.0
4-Methylphenol			0.600		30.0
N-Nitroso-di-n-propylamine			0.500		30.0
Hexachloroethane			0.300		30.0
Nitrobenzene			0.200		30.0
Isophorone			0.400		30.0
2-Nitrophenol			0.100		30.0
2,4-Dimethylphenol			0.200		30.0
bis(2-Chloroethoxy)methane			0.300		30.0
2,4-Dichlorophenol			0.200		30.0
1,2,4-Trichlorobenzene			0.200		30.0
Naphthalene			0.700		30.0
4-Chloroaniline			0.010		30.0
Hexachlorobutadiene			0.010		30.0
4-Chloro-3-methylphenol			0.200		30.0
2-Methylnaphthalene			0.400		30.0
Hexachlorocyclopentadiene			0.010		30.0
2,4,6-Trichlorophenol			0.200		30.0
2,4,5-Trichlorophenol			0.200		30.0
2-Chloronaphthalene			0.800		30.0
2-Nitroaniline			0.010		30.0
Dimethylphthalate			0.010		30.0
Acenaphthylene			0.900		30.0
2,6-Dinitrotoluene			0.200		30.0
3-Nitroaniline			0.010		30.0
Acenaphthene			0.900		30.0
2,4-Dinitrophenol			0.010		30.0
4-Nitrophenol			0.010		30.0
Dibenzofuran			0.800		30.0
2,4-Dinitrotoluene			0.200		30.0

FORM VII SV-1

7B-2
SEMIVOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Diethylphthalate			0.101		30.0
4-Chlorophenyl-phenylether			0.400		30.0
Fluorene			0.900		30.0
4-Nitroaniline			0.010		30.0
4,6-Dinitro-2-methylphenol			0.010		30.0
N-Nitrosodiphenylamine (1)			0.010		30.0
4-Bromophenyl-phenylether			0.100		30.0
Hexachlorobenzene			0.100		30.0
Pentachlorophenol			0.050		30.0
Phenanthrene			0.700		30.0
Anthracene			0.700		30.0
Carbazole			0.010		30.0
Di-n-butylphthalate			0.010		30.0
Fluoranthene			0.600		30.0
Pyrene			0.600		30.0
Butylbenzylphthalate			0.010		30.0
3,3'-Dichlorobenzidine			0.010		30.0
Benzo(a)anthracene			0.800		30.0
Chrysene			0.700		30.0
bis(2-Ethylhexyl)phthalate			0.010		30.0
Di-n-octylphthalate			0.010		30.0
Benzo(b)fluoranthene			0.700		30.0
Benzo(k)fluoranthene			0.700		30.0
Benzo(a)pyrene			0.700		30.0
Indeno(1,2,3-cd)pyrene			0.500		30.0
Dibenz(a,h)anthracene			0.400		30.0
Benzo(g,h,i)perylene			0.500		30.0
Nitrobenzene-d5			0.200		30.0
2-Fluorobiphenyl			0.700		30.0
Terphenyl-d14			0.500		30.0
Phenol-d5			0.800		30.0
2-Fluorophenol			0.600		30.0
2,4,6-Tribromophenol			0.010		30.0
2-Chlorophenol-d4			0.800		30.0
1,2-Dichlorobenzene-d4			0.400		30.0

(1) Cannot be separated from Diphenylamine

FORM VII SV-2

7D-1
MODIFIED 524.2 VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	___ RRF	RRF10	MIN RRF	%D	MAX %D
Dichlorodifluoromethane			0.050		30.0
Chloromethane			0.050		30.0
Vinyl Chloride			0.050		30.0
Bromomethane			0.050		30.0
Chloroethane			0.050		30.0
Trichlorofluoromethane			0.050		30.0
1,1-Dichloroethene			0.050		30.0
Acetone			0.020		30.0
Carbon Disulfide			0.050		30.0
Methylene Chloride			0.050		30.0
trans-1,2-Dichloroethene			0.050		30.0
1,1-Dichloroethane			0.050		30.0
2,2-Dichloropropane			0.050		30.0
2-Butanone			0.010		30.0
cis-1,2-Dichloroethene			0.050		30.0
Chloroform			0.050		30.0
Bromochloromethane			0.020		30.0
1,1,1-Trichloroethane			0.050		30.0
1,1-Dichloropropene			0.050		30.0
Carbon Tetrachloride			0.050		30.0
Benzene			0.050		30.0
1,2-Dichloroethane			0.050		30.0
Trichloroethene			0.050		30.0
1,2-Dichloropropane			0.050		30.0
Bromodichloromethane			0.050		30.0
Dibromomethane			0.020		30.0
4-Methyl-2-Pentanone			0.020		30.0
trans-1,3-Dichloropropene			0.050		30.0
Toluene			0.050		30.0
cis-1,3-Dichloropropene			0.050		30.0
1,1,2-Trichloroethane			0.050		30.0
2-Hexanone			0.020		30.0

FORM VII 524.2-1

7D-2
MODIFIED 524.2 VOLATILE INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	$\overline{RRF}$	RRF10	MIN RRF	%D	MAX %D
Tetrachloroethene			0.050		30.0
1,4-Dioxane			none		30.0
Tetrahydrofuran			0.020		30.0
1,3-Dichloropropane			0.050		30.0
Dibromochloromethane			0.020		30.0
Bromoform			0.020		30.0
Isopropylbenzene			0.050		30.0
1,2-Dibromoethane			0.020		30.0
Chlorobenzene			0.050		30.0
Ethylbenzene			0.050		30.0
1,1,1,2-Tetrachloroethane			0.050		30.0
1,1,2,2-Tetrachloroethane			0.050		30.0
Xylene (total)			0.050		30.0
Styrene			0.050		30.0
Bromobenzene			0.050		30.0
N-Propylbenzene			0.050		30.0
1,2,3-Trichloropropane			0.050		30.0
2-Chlorotoluene			0.050		30.0
1,3,5-Trimethylbenzene			0.050		30.0
4-Chlorotoluene			0.050		30.0
tert-Butylbenzene			0.050		30.0
1,2,4-Trimethylbenzene			0.050		30.0
sec-Butylbenzene			0.050		30.0
4-Isopropyltoluene			0.050		30.0
1,3-Dichlorobenzene			0.050		30.0
1,4-Dichlorobenzene			0.050		30.0
N-Butylbenzene			0.050		30.0
1,2-Dichlorobenzene			0.050		30.0
1,2-Dibromo-3-Chloropropane			0.020		30.0
1,2,4-Trichlorobenzene			0.050		30.0
Hexachlorobutadiene			0.050		30.0
Naphthalene			0.050		30.0
1,2,3-trichlorobenzene			0.050		30.0
1,2-Dichloroethane-d4			0.050		30.0
1,2-Dichlorobenzene-d4			0.050		30.0

FORM VII 524.2-2

7F
WATER SOLUBLE ORGANICS - GC/NPD
INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (µg/L)	NOM AMOUNT (µg/L)	%D
N,N-Dimethylformamide						
Acetonitrile						
Urethane						
Ethylurethane						
Acrylonitrile						
N,N-Dimethylacetamide						

FORM VII WSO/NPD

7G
WATER SOLUBLE ORGANICS - GC/FID
INITIAL CALIBRATION VERIFICATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Verification Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (mg/L)	NOM AMOUNT (mg/L)	%D
2-Methoxyethanol						
Diethyl Ether						
Methanol						
Ethanol						
N-Propanol						
Ethylene Glycol						
Propylene Glycol						
1,4-Dioxane						
Dimethyl Sulfoxide						
2-Ethoxyethanol						

FORM VII WSO/FID

8A-1
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Heated Purge: (Y/N) ___ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	___ RRF	RRF50	MIN RRF	%D	MAX %D
Dichlorodifluoromethane			0.050		30.0
Chloromethane			0.050		30.0
Vinyl Chloride			0.050		25.0
Bromomethane			0.050		25.0
Chloroethane			0.050		25.0
Trichlorofluoromethane			0.050		25.0
1,1-Dichloroethene			0.050		25.0
Acetone			0.020		30.0
Carbon Disulfide			0.050		30.0
Methylene Chloride			0.050		30.0
trans-1,2-Dichloroethene			0.050		25.0
1,1-Dichloroethane			0.050		25.0
2,2-Dichloropropane			0.050		25.0
2-Butanone			0.020		30.0
cis-1,2-Dichloroethene			0.050		25.0
Chloroform			0.050		25.0
Bromochloromethane			0.020		25.0
1,1,1-Trichloroethane			0.050		25.0
1,1-Dichloropropene			0.050		25.0
Carbon Tetrachloride			0.050		25.0
Benzene			0.050		25.0
1,2-Dichloroethane			0.050		25.0
Trichloroethene			0.050		25.0
1,2-Dichloropropane			0.050		25.0
Bromodichloromethane			0.050		25.0
Dibromomethane			0.020		25.0
4-Methyl-2-Pentanone			0.020		30.0
trans-1,3-Dichloropropene			0.050		25.0
Toluene			0.050		25.0
cis-1,3-Dichloropropene			0.050		25.0
1,1,2-Trichloroethane			0.050		25.0
2-Hexanone			0.020		30.0

FORM VIII VOA-1

8A-2
VOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Heated Purge: (Y/N) ___ Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Tetrachloroethene			0.050		25.0
1,4-Dioxane			0.010		30.0
Tetrahydrofuran			0.020		25.0
1,3-Dichloropropane			0.050		25.0
Dibromochloromethane			0.020		25.0
Bromoform			0.020		25.0
Isopropylbenzene			0.050		25.0
1,2-Dibromoethane			0.020		25.0
Chlorobenzene			0.050		25.0
Ethylbenzene			0.050		25.0
1,1,1,2-Tetrachloroethane			0.050		25.0
1,1,2,2-Tetrachloroethane			0.050		25.0
Xylene (total)			0.050		25.0
Styrene			0.050		25.0
Bromobenzene			0.050		25.0
N-Propylbenzene			0.050		25.0
1,2,3-Trichloropropane			0.050		25.0
2-Chlorotoluene			0.050		25.0
1,3,5-Trimethylbenzene			0.050		25.0
4-Chlorotoluene			0.050		25.0
tert-Butylbenzene			0.050		25.0
1,2,4-Trimethylbenzene			0.050		25.0
sec-Butylbenzene			0.050		25.0
4-Isopropyltoluene			0.050		25.0
1,3-Dichlorobenzene			0.050		25.0
1,4-Dichlorobenzene			0.050		25.0
N-Butylbenzene			0.050		25.0
1,2-Dichlorobenzene			0.050		25.0
1,2-Dibromo-3-Chloropropane			0.020		25.0
1,2,4-Trichlorobenzene			0.050		25.0
Hexachlorobutadiene			0.050		25.0
Naphthalene			0.050		25.0
1,2,3-trichlorobenzene			0.050		25.0
1,2-Dichloroethane-d4			0.050		30.0
1,2-Dichlorobenzene-d4			0.050		30.0

FORM VIII VOA-2

8B-1
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

COMPOUND	RRF	RRF50	MIN RRF	%D	MAX %D
Phenol			0.800		25.0
bis(2-Chloroethyl)ether			0.700		25.0
2-Chlorophenol			0.800		25.0
1,3-Dichlorobenzene			0.600		25.0
1,4-Dichlorobenzene			0.500		25.0
1,2-Dichlorobenzene			0.400		25.0
2-Methylphenol			0.700		25.0
2,2'-oxybis(1-Chloropropane)			0.010		30.0
4-Methylphenol			0.600		25.0
N-Nitroso-di-n-propylamine			0.500		25.0
Hexachloroethane			0.300		25.0
Nitrobenzene			0.200		25.0
Isophorone			0.400		25.0
2-Nitrophenol			0.100		25.0
2,4-Dimethylphenol			0.200		25.0
bis(2-Chloroethoxy)methane			0.300		25.0
2,4-Dichlorophenol			0.200		25.0
1,2,4-Trichlorobenzene			0.200		25.0
Naphthalene			0.700		25.0
4-Chloroaniline			0.010		30.0
Hexachlorobutadiene			0.010		30.0
4-Chloro-3-methylphenol			0.200		25.0
2-Methylnaphthalene			0.400		25.0
Hexachlorocyclopentadiene			0.010		30.0
2,4,6-Trichlorophenol			0.200		25.0
2,4,5-Trichlorophenol			0.200		25.0
2-Chloronaphthalene			0.800		25.0
2-Nitroaniline			0.010		30.0
Dimethylphthalate			0.010		30.0
Acenaphthylene			0.900		25.0
2,6-Dinitrotoluene			0.200		25.0
3-Nitroaniline			0.010		30.0
Acenaphthene			0.900		25.0
2,4-Dinitrophenol			0.010		30.0
4-Nitrophenol			0.010		30.0
Dibenzofuran			0.800		25.0
2,4-Dinitrotoluene			0.200		25.0

FORM VIII SV-1

8B-2
SEMIVOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

COMPOUND	$\overline{RRF}$	RRF50	MIN RRF	%D	MAX %D
Diethylphthalate			0.010		30.0
4-Chlorophenyl-phenylether			0.400		25.0
Fluorene			0.900		25.0
4-Nitroaniline			0.010		30.0
4,6-Dinitro-2-methylphenol			0.010		30.0
N-Nitrosodiphenylamine (1)			0.010		30.0
4-Bromophenyl-phenylether			0.100		25.0
Hexachlorobenzene			0.100		25.0
Pentachlorophenol			0.050		25.0
Phenanthrene			0.700		25.0
Anthracene			0.700		25.0
Carbazole			0.010		30.0
Di-n-butylphthalate			0.010		30.0
Fluoranthene			0.600		25.0
Pyrene			0.600		25.0
Butylbenzylphthalate			0.010		30.0
3,3'-Dichlorobenzidine			0.010		30.0
Benzo(a)anthracene			0.800		25.0
Chrysene			0.700		25.0
bis(2-Ethylhexyl)phthalate			0.010		30.0
Di-n-octylphthalate			0.010		30.0
Benzo(b)fluoranthene			0.700		25.0
Benzo(k)fluoranthene			0.700		25.0
Benzo(a)pyrene			0.700		25.0
Indeno(1,2,3-cd)pyrene			0.500		25.0
Dibenz(a,h)anthracene			0.400		25.0
Benzo(g,h,i)perylene			0.500		25.0
Nitrobenzene-d5			0.200		25.0
2-Fluorobiphenyl			0.700		25.0
Terphenyl-d14			0.500		25.0
Phenol-d5			0.800		25.0
2-Fluorophenol			0.600		25.0
2,4,6-Tribromophenol			0.010		30.0
2-Chlorophenol-d4			0.800		25.0
1,2-Dichlorobenzene-d4			0.400		25.0

(1) Cannot be separated from Diphenylamine

FORM VIII SV-2

8C-1
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

EPA Sample No.(PIBLK): _____ Date Analyzed :_____

Lab File ID (PIBLK): _____ Time Analyzed :_____

EPA Sample No.(PEM): _____ Date Analyzed :_____

Lab File ID (PEM): _____ Time Analyzed :_____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

PEM COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC						
beta-BHC						
gamma-BHC (Lindane)						
Endrin						
4,4'-DDT						
Methoxychlor						

4,4'-DDT % breakdown (1): _____ Endrin % breakdown (1): _____

Combined % breakdown (1): _____

FORM VIII PEST-1

8C-2
PESTICIDE CALIBRATION VERIFICATION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

EPA Sample No.(PIBLK): _____ Date Analyzed :_____

Lab File ID (PIBLK): _____ Time Analyzed :_____

EPA Sample No.(INDA): _____ Date Analyzed :_____

Lab File ID (INDA): _____ Time Analyzed :_____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

INDIVIDUAL MIX A COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
alpha-BHC						
gamma-BHC (Lindane)						
Heptachlor						
Endosulfan I						
Dieldrin						
Endrin						
4,4'-DDD						
4,4'-DDT						
Methoxychlor						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

EPA Sample No.(INDB): _____ Date Analyzed :_____

Lab File ID (INDB): _____ Time Analyzed :_____

INDIVIDUAL MIX B COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
beta-BHC						
delta-BHC						
Aldrin						
Heptachlor epoxide						
4,4'-DDE						
Endosulfan II						
Endosulfan sulfate						
Endrin ketone						
Endrin aldehyde						
alpha-Chlordane						
gamma-Chlordane						
Tetrachloro-m-xylene						
Decachlorobiphenyl						

FORM VIII PEST-2

8D-1
MODIFIED 524.2 VOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	___ RRF	RRF10	MIN RRF	%D	MAX %D
Dichlorodifluoromethane			0.050		30.0
Chloromethane			0.050		30.0
Vinyl Chloride			0.050		30.0
Bromomethane			0.050		30.0
Chloroethane			0.050		30.0
Trichlorofluoromethane			0.050		30.0
1,1-Dichloroethene			0.050		30.0
Acetone			0.020		30.0
Carbon Disulfide			0.050		30.0
Methylene Chloride			0.050		30.0
trans-1,2-Dichloroethene			0.050		30.0
1,1-Dichloroethane			0.050		30.0
2,2-Dichloropropane			0.050		30.0
2-Butanone			0.010		30.0
cis-1,2-Dichloroethene			0.050		30.0
Chloroform			0.050		30.0
Bromochloromethane			0.020		30.0
1,1,1-Trichloroethane			0.050		30.0
1,1-Dichloropropene			0.050		30.0
Carbon Tetrachloride			0.050		30.0
Benzene			0.050		30.0
1,2-Dichloroethane			0.050		30.0
Trichloroethene			0.050		30.0
1,2-Dichloropropane			0.050		30.0
Bromodichloromethane			0.050		30.0
Dibromomethane			0.020		30.0
4-Methyl-2-Pentanone			0.020		30.0
trans-1,3-Dichloropropene			0.050		30.0
Toluene			0.050		30.0
cis-1,3-Dichloropropene			0.050		30.0
1,1,2-Trichloroethane			0.050		30.0
2-Hexanone			0.020		30.0

FORM VIII 524.2-1

8D-2
MODIFIED 524.2 VOLATILE CONTINUING CALIBRATION CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Calibration Date:_____ Time:_____

Lab File ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	$\overline{RRF}$	RRF10	MIN RRF	%D	MAX %D
Tetrachloroethene			0.050		30.0
1,4-Dioxane			none		30.0
Tetrahydrofuran			0.020		30.0
1,3-Dichloropropane			0.050		30.0
Dibromochloromethane			0.020		30.0
Bromoform			0.020		30.0
Isopropylbenzene			0.050		30.0
1,2-Dibromoethane			0.020		30.0
Chlorobenzene			0.050		30.0
Ethylbenzene			0.050		30.0
1,1,1,2-Tetrachloroethane			0.050		30.0
1,1,2,2-Tetrachloroethane			0.050		30.0
Xylene (total)			0.050		30.0
Styrene			0.050		30.0
Bromobenzene			0.050		30.0
N-Propylbenzene			0.050		30.0
1,2,3-Trichloropropane			0.050		30.0
2-Chlorotoluene			0.050		30.0
1,3,5-Trimethylbenzene			0.050		30.0
4-Chlorotoluene			0.050		30.0
tert-Butylbenzene			0.050		30.0
1,2,4-Trimethylbenzene			0.050		30.0
sec-Butylbenzene			0.050		30.0
4-Isopropyltoluene			0.050		30.0
1,3-Dichlorobenzene			0.050		30.0
1,4-Dichlorobenzene			0.050		30.0
N-Butylbenzene			0.050		30.0
1,2-Dichlorobenzene			0.050		30.0
1,2-Dibromo-3-Chloropropane			0.020		30.0
1,2,4-Trichlorobenzene			0.050		30.0
Hexachlorobutadiene			0.050		30.0
Naphthalene			0.050		30.0
1,2,3-trichlorobenzene			0.050		30.0
1,2-Dichloroethane-d4			0.050		30.0
1,2-Dichlorobenzene-d4			0.050		30.0

FORM VIII 524.2-2

8E
AROCLOR CONTINUING CALIBRATION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

EPA Sample No.(AIBLK): _____ Date Analyzed :_____

Lab File ID (AIBLK): _____ Time Analyzed :_____

EPA Sample No.(CCS): _____ Date Analyzed :_____

Lab File ID (CCS): _____ Time Analyzed :_____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT	AVG CALC AMOUNT	NOM AMOUNT	%D
Aroclor 1254	*1							
	*2							
	*3							
	4							
	5							
Aroclor ____	*1							
	*2							
	*3							
	4							
	5							
Aroclor ____	*1							
	*2							
	*3							
	4							
	5							
Aroclor ____	*1							
	*2							
	*3							
	4							
	5							
Aroclor ____	*1							
	*2							
	*3							
	4							
	5							

* Denotes required peaks

FORM VIII PCB

8F
WATER SOLUBLE ORGANICS - GC/NPD
CONTINUING CALIBRATION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

EPA Sample No.(NIBLK): _____ Date Analyzed :_____

Lab File ID (NIBLK): _____ Time Analyzed :_____

EPA Sample No.(CCS): _____ Date Analyzed :_____

Lab File ID (CCS): _____ Time Analyzed :_____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
N,N-Dimethylformamide						
Acetonitrile						
Urethane						
Ethylurethane						
Acrylonitrile						
N,N-Dimethylacetamide						

FORM VIII WSO/NPD

8G
WATER SOLUBLE ORGANICS - GC/FID
CONTINUING CALIBRATION SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

Init. Calib. Times: _____ _____

EPA Sample No.(FIBLK): _____ Date Analyzed :_____

Lab File ID (FIBLK): _____ Time Analyzed :_____

EPA Sample No.(CCS): _____ Date Analyzed :_____

Lab File ID (CCS): _____ Time Analyzed :_____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	RT	RT WINDOW FROM	RT WINDOW TO	CALC AMOUNT (ng)	NOM AMOUNT (ng)	%D
2-Methoxyethanol						
Diethyl Ether						
Methanol						
Ethanol						
N-Propanol						
Ethylene Glycol						
Propylene Glycol						
1,4-Dioxane						
Dimethyl Sulfoxide						
2-Ethoxyethanol						

FORM VIII WSO/FID

9A
VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID (Standard): _____ Date Analyzed:_____

Instrument ID: _____ Time Analyzed:_____

Heated Purge: (Y/N) ___

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

		IS1(FBZ)		IS2(CBZ)	
		AREA #	RT #	AREA #	RT #
	12 HOUR STD				
	UPPER LIMIT				
	LOWER LIMIT				
	EPA SAMPLE NO.				
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

IS1 (FBZ) = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX VOA

9B-1
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID (Standard): _____ Date Analyzed:_____

Instrument ID: _____ Time Analyzed:_____

	IS1(DCB)		IS2(NPT)		IS3(ANT)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD						
UPPER LIMIT						
LOWER LIMIT						
EPA SAMPLE NO.						
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX SV-1

9B-2
SEMIVOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID (Standard): _____ Date Analyzed:_____

Instrument ID: _____ Time Analyzed:_____

		IS4(PHN)		IS5(CRY)		IS6(PRY)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD						
	UPPER LIMIT						
	LOWER LIMIT						
	EPA SAMPLE NO.						
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag internal standard area values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX SV-2

9C
PESTICIDE ANALYTICAL SEQUENCE

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, QC SAMPLES AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: _____ DCB: _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							

QC LIMITS
TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX PEST

9D
MODIFIED 524.2 VOLATILE
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab File ID (Standard): _____ Date Analyzed:_____

Instrument ID: _____ Time Analyzed:_____

GC Column: _____ ID: _____(m) _____(mm) _____(µm)

		IS1(FBZ)		IS2(CBZ)	
		AREA #	RT #	AREA #	RT #
	12 HOUR STD				
	UPPER LIMIT				
	LOWER LIMIT				
	EPA SAMPLE NO.				
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

IS1 (FBZ) = Fluorobenzene
IS2 (CBZ) = Chlorobenzene-d5

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = - 50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX 524.2

9E
AROCLOR ANALYTICAL SEQUENCE

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, QC SAMPLES, AND REQUIRED BLANKS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
TCX: _____ DCB: _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	TCX RT #	DCB RT #
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
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21							
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							

QC LIMITS
TCX = Tetrachloro-m-xylene (± 0.05 MINUTES)
DCB = Decachlorobiphenyl (± 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX PCB

9F
WATER SOLUBLE ORGANICS - GC/NPD
ANALYTICAL SEQUENCE

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, QC SAMPLES, AND REQUIRED BLANKS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION - DMA: _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	DMA RT #
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

DMA = N,N-Dimethylacetamide

QC LIMITS
(± 0.07 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX WSO/NPD

9G
WATER SOLUBLE ORGANICS - GC/FID
ANALYTICAL SEQUENCE

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Instrument ID: _____ Init. Calib. Date(s):_____ _____

GC Column (1,2) ___ : _____ ID: _____(m) _____(mm) _____(µm)

THE ANALYTICAL SEQUENCE OF STANDARDS, SAMPLES, QC SAMPLES, AND REQUIRED BLANKS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION - 2EE: _____

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED	2EE RT #
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
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18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						

2EE = 2-Ethoxyethanol

QC LIMITS
(± 0.07 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

page __ of __

FORM IX WSO/FID

10C-1
PESTICIDE FLORISIL CARTRIDGE CHECK

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Florisil Cartridge Lot Number: _____ Date of Analysis: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	SPIKE ADDED (ng)	SPIKE RECOVERED (ng)	% REC #	QC LIMITS
alpha-BHC				80-120
gamma-BHC (Lindane)				80-120
Heptachlor				80-120
Endosulfan I				80-120
Dieldrin				80-120
Endrin				80-120
4,4'-DDD				80-120
4,4'-DDT				80-120
Methoxychlor				80-120
Tetrachloro-m-xylene				80-120
Decachlorobiphenyl				80-120

Column to be used to flag recovery with an asterisk.
* Values outside of QC limits.

THIS CARTRIDGE LOT APPLIES TO THE FOLLOWING SAMPLES, BLANKS, MS, AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
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19				
20				
21				
22				
23				

page __ of __

FORM X PEST-1

10C-2
PESTICIDE GPC CALIBRATION

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

GPC Column: _____ Calibration Date: _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

COMPOUND	SPIKE ADDED (ng)	SPIKE RECOVERED (ng)	% REC #	QC. LIMITS REC.
gamma-BHC (Lindane)				80-110
Heptachlor				80-110
Aldrin				80-110
Dieldrin				80-110
Endrin				80-110
4,4'-DDT				80-110

Column to be used to flag recovery values with an asterisk
* Values outside of QC limits

THIS GPC CALIBRATION APPLIES TO THE FOLLOWING SAMPLES, BLANKS, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
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21				
22				
23				
24				
25				
26				

page __ of __

FORM X PEST-2

11C-1
PESTICIDE IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID : _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

Matrix (water/soil/waste) _____

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____

page __ of __

FORM XI PEST-1

11C-2
PESTICIDE IDENTIFICATION SUMMARY
FOR MULTICOMPONENT ANALYTES

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID : _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

Matrix (water/soil/waste) _____

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	%D
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks for each column are required for identification of multicomponent analytes

page __ of __

FORM XI PEST-2

11E
AROCLOR IDENTIFICATION SUMMARY

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID : _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

Matrix (water/soil/waste) _____

ANALYTE	PEAK	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	MEAN CONCENTRATION	%D
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						
_____ COLUMN 1	1						
	2						
	3						
	4						
	5						
COLUMN 2	1						
	2						
	3						
	4						
	5						

At least 3 peaks for each column are required for identification of multicomponent analytes

page __ of __

FORM XI PCB

11F
WATER SOLUBLE ORGANICS - GC/NPD
IDENTIFICATION SUMMARY

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID : _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

Matrix (water/soil/waste) _____

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____

page __ of __

FORM XI WSO/NPD

11G
WATER SOLUBLE ORGANICS - GC/FID
IDENTIFICATION SUMMARY

EPA SAMPLE NO.
_____

Lab Name:_____ Contract:_____

Lab Code: _____ Case No.: _____ SDG No.: _____

Lab Sample ID : _____ Date(s) Analyzed: _____ _____

Instrument ID (1): _____ Instrument ID (2): _____

GC Column(1): _____ ID: _____(m) _____(mm) _____(µm)

GC Column(2): _____ ID: _____(m) _____(mm) _____(µm)

Matrix (water/soil/waste) _____

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____
_____	1	_____	_____	_____	_____	
	2	_____	_____	_____	_____	_____

page __ of __

FORM XI WSO/FID

SAMPLE LOG-IN SHEET

Lab Name					Page _____ of _____
Received By (Print Name)					Log-in Date
Received By (Signature)					
Case Number		Sample Delivery Group No.			
Remarks:		EPA Sample #	Corresponding Sample Tag #	Corresponding Assigned Lab #	Remarks: Condition of Sample Shipment, etc.
1. Custody Seal(s)	Present/Absent* Intact/Broken				
2. Custody Seal Nos.	_____ _____				
3. Cooler Temperature (if >10 C, then*)	_____				
4. Chain-of Custody Records	Present/Absent*				
5. Traffic Reports or Packing Lists	Present/Absent*				
6. Airbill	Airbill/Sticker Present/Absent*				
7. Airbill No.	_____ _____				
8. Sample Tags	Present/Absent*				
Sample Tag Numbers	Listed/Not Listed on Chain-of-Custody				
9. Sample Condition	Intact/Broken*/Leaking				
10. Does information on custody records, traffic reports, and sample tags agree?	Yes/No*				
11. Date Received at Lab	_____				
12. Time Received	_____				
Sample Transfer					
Fraction	Fraction				
Area #	Area #				
By	By				
On	On				

* Contact RSCC and attach record of resolution.

Reviewed By	Logbook No.
Date	Logbook Page No.

FORM DC-1

ORGANICS COMPLETE SDG FILE (CSF) INVENTORY SHEET

LABORATORY NAME _____
CITY/STATE _____

CASE NO. _____ SDG NO. _____ SDG NOS. TO FOLLOW _____
_____ _____

CONTRACT NO. _____
SOW NO. _____

All documents delivered in the Complete SDG File must be original documents where possible.

	PAGE NOs FROM	TO	CHECK LAB	EPA
1. **Inventory Sheet** (Form DC-2) (Do not number)	____	____	_____	_____
2. **SDG Case Narrative**	____	____	_____	_____
3. **SDG Cover Sheet/Traffic Report**	____	____	_____	_____
4. **Volatiles Data**				
a. QC Summary				
System Monitoring Compound Summary (Form II VOA)	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Summary (Form III VOA)	____	____	_____	_____
Method Blank Summary (Form IV VOA)	____	____	_____	_____
GC/MS Instrument Performance Check (Form V VOA)	____	____	_____	_____
Internal Standard Area and RT Summary (Form IX VOA)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results - (Form I VOA-1, VOA-2)			_____	_____
Tentatively Identified Compounds (Form I VOA-TIC)			_____	_____
Reconstructed total ion chromatograms (RIC) for each sample			_____	_____
For each sample:				
Raw spectra and background-subtracted mass spectra of target compounds identified			_____	_____
Quantitation reports			_____	_____
Mass spectra of all reported TICs with three best library matches			_____	_____
c. Standards Data (All Instruments)	____	____		
Initial Calibration Data (Form VI VOA-1, VOA-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Initial Calibration Verification Data (Form VII VOA-1, VOA-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Continuing Calibration Data (Form VIII VOA-1, VOA-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
d. Raw QC Data				
BFB	____	____	_____	_____
Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
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5. **Semivolatiles Data**

a. QC Summary				
Surrogate Percent Recovery Summary (Form II SV)	____	____	_____	_____
MS/MSD Summary (Form III SV)	____	____	_____	_____
Method Blank Summary (Form IV SV)	____	____	_____	_____
GC/MS Instrument Performance Check (Form V SV)	____	____	_____	_____
Internal Standard Area and RT Summary (Form VIII SV)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results (Form I SV-1, SV-2)			_____	_____
Tentatively Identified Compounds (Form I SV-TIC)			_____	_____
Reconstructed total ion chromatograms (RIC) for each sample			_____	_____
For each sample:				
Raw spectra and background-subtracted mass spectra of target compounds			_____	_____
Quantitation reports			_____	_____
Mass spectra of TICs with three best library matches			_____	_____
GPC chromatograms (if GPC performed)			_____	_____
c. Standards Data (All Instruments)	____	____		
Initial Calibration Data (Form VI SV-1, SV-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Initial Calibration Verification Data (Form VII VOA)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Continuing Calibration Data (Form VII SV-1, SV-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
d. Raw QC Data				
DFTPP	____	____	_____	_____
Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
e. Raw GPC Data	____	____	_____	_____

6. **Pesticides Data**

a. QC Summary				
Surrogate Percent Recovery Summary (Form II PEST)	____	____	_____	_____
MS/MSD Duplicate Summary (Form III PEST)	____	____	_____	_____
Method Blank Summary (Form IV PEST)	____	____	_____	_____

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6. **Pesticides Data** (Cont.)				
b. Sample Data	____	____		
TCL Results - Organic Analysis Data Sheet (Form I PEST)			_____	_____
Chromatograms (Primary Column)			_____	_____
Chromatograms from second GC column confirmation			_____	_____
GC Integration report or data system printout			_____	_____
Manual work sheets			_____	_____
For pesticides/Aroclors confirmed by GC/MS, copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & standards)			_____	_____
c. Standards Data	____	____		
Initial Calibration of Single Component Analytes (Form VI PEST-1 and PEST-2)			_____	_____
Initial Calibration of Multicomponent Analytes (Form VI PEST-3 and PEST-4)			_____	_____
Analyte Resolution Summary (Form VI PEST-5)			_____	_____
Performance Evaluation Mixture (Form VI PEST-6)			_____	_____
Individual Standard Mixture A (Form VI PEST-7)			_____	_____
Individual Standard Mixture B (Form VI PEST-8)			_____	_____
Calibration Verification Summary (Form VII PEST-1)			_____	_____
Calibration Verification Summary (Form VII PEST-2)			_____	_____
Analytical Sequence (Form IX PEST)			_____	_____
Florisil Cartridge Check (Form X PEST-1)			_____	_____
Pesticide GPC Calibration (Form X PEST-2)			_____	_____
Pesticide Identification Summary for Single Component Analytes (Form XI PEST-1)			_____	_____
Pesticide Identification Summary for Multicomponent Analytes (Form XI PEST-2)			_____	_____
Chromatograms and data system printouts A printout of retention times and corresponding peak areas or peak heights			_____	_____
d. Raw QC Data Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
e. Raw GPC Data	____	____	_____	_____
f. Raw Florisil Data	____	____	_____	_____

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7. **Modified 524.2 Volatiles Data**				
a. QC Summary				
System Monitoring Compound Summary (Form II 524.2)	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Summary (Form III 524.2)	____	____	_____	_____
Method Blank Summary (Form IV 524.2)	____	____	_____	_____
GC/MS Instrument Performance Check (Form V 524.2)	____	____	_____	_____
Internal Standard Area and RT Summary (Form IX 524.2)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results - (Form I 524.2-1, 524.2-2)			_____	_____
Tentatively Identified Compounds (Form I 524.2-TIC)			_____	_____
Reconstructed total ion chromatograms (RIC) for each sample			_____	_____
For each sample: Raw spectra and background-subtracted mass spectra of target compounds identified			_____	_____
Quantitation reports			_____	_____
Mass spectra of all reported TICs with three best library matches			_____	_____
c. Standards Data (All Instruments)	____	____		
Initial Calibration Data (Form VI 524.2-1, 524.2-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Initial Calibration Verification Data (Form VII 524.2-1, 524.2-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
Continuing Calibration Data (Form VIII 524.2-1, 524.2-2)			_____	_____
RICs and Quantitation Reports for all Standards			_____	_____
d. Raw QC Data				
BFB	_____	____	_____	_____
Blank Data	_____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	_____	____	_____	_____

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8. **Aroclors (only)**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II PCB)	____	____	_____	_____
MS/MSD Duplicate Summary (Form III PCB)	____	____	_____	_____
Method Blank Summary (Form IV PCB)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results - Organic Analysis Data Sheet (Form I PCB)			_____	_____
Chromatograms (Primary Column)			_____	_____
Chromatograms from second GC column confirmation			_____	_____
GC Integration report or data system printout			_____	_____
Manual work sheets			_____	_____
For Aroclors confirmed by GC/MS, copies of raw spectra and copies of background-subtracted mass spectra of three peak for each target Aroclor (samples & reference standards)			_____	_____
c. Standards Data	____	____		
Initial Calibration of Aroclors (Form VI PCB-1, PCB-2)			_____	_____
Aroclor Resolution Summary (Form VI PCB-3)			_____	_____
Continuing Calibration Summary (Form VIII PCB)			_____	_____
Analytical Sequence (Form IX PCB)			_____	_____
Aroclor Identification Summary (Form XI PCB)			_____	_____
Chromatograms and data system printouts A printout of retention times and corresponding peak areas or peak heights			_____	_____
d. Raw QC Data				
Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
9. **Water Soluble Organics - GC/NPD**				
a. QC Summary				
Surrogate Percent Recovery Summary (Form II WSO/NPD)	____	____	_____	_____
MS/MSD Duplicate Summary (Form III WSO/NPD)	____	____	_____	_____
Method Blank Summary (Form IV WSO/NPD)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results - Organic Analysis Data Sheet (Form I WSO/NPD)			_____	_____
Chromatograms (Primary Column)			_____	_____
Chromatograms from second GC column confirmation			_____	_____
GC Integration report or data system printout			_____	_____
Manual work sheets			_____	_____

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9. **Water Soluble Organics - CG/NPD** (Cont.)				
For Water Soluble Organics - GC/NPD confirmed by GC/MS, copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & reference standards)			_____	_____
c. Standards Data	____	____		
Initial Calibration of Water Soluble Organics - GC/NPD (Form VI WSO/NPD-1)			_____	_____
Water Soluble Organics - GC/NPD Resolution Summary (Form VI WSO/NPD-2)			_____	_____
Initial Calibration Verification Data (Form VII WSO/NPD)			_____	_____
Continuing Calibration Summary (Form VIII WSO/NPD)			_____	_____
Analytical Sequence (Form IX WSO/NPD)			_____	_____
Aroclor Identification Summary (Form XI WSO/NPD)			_____	_____
Chromatograms and data system printouts A printout of retention times and corresponding peak areas or peak heights			_____	_____
d. Raw QC Data Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
10. **Water Soluble Organics - GC/FID**				
a. QC Summary Surrogate Percent Recovery Summary (Form II WSO/FID)	____	____	_____	_____
MS/MSD Duplicate Summary (Form III WSO/FID)	____	____	_____	_____
Method Blank Summary (Form IV WSO/FID)	____	____	_____	_____
b. Sample Data	____	____		
TCL Results - Organic Analysis Data Sheet (Form I WSO/FID)			_____	_____
Chromatograms (Primary Column)			_____	_____
Chromatograms from second GC column confirmation			_____	_____
GC Integration report or data system printout			_____	_____
Manual work sheets			_____	_____
For Water Soluble Organics - GC/FID confirmed by GC/MS, copies of raw spectra and copies of background-subtracted mass spectra of target compounds (samples & reference standards)			_____	_____
c. Standards Data	____	____		
Initial Calibration of Water Soluble Organics - GC/NPD (Form VI WSO/FID-1)			_____	_____
Water Soluble Organics - GC/NPD Resolution Summary (Form VI WSO/FID-2)			_____	_____

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10. **Water Soluble Organics - GC/FID** (Cont.)				
Initial Calibration Verification Data (Form VII WSO/FID)			_____	_____
Continuing Calibration Summary (Form VIII WSO/FID)			_____	_____
Analytical Sequence (Form IX WSO/FID)			_____	_____
Aroclor Identification Summary (Form XI WSO/FID)			_____	_____
Chromatograms and data system printouts A printout of retention times and corresponding peak areas or peak heights			_____	_____
d. Raw QC Data Blank Data	____	____	_____	_____
Matrix Spike/Matrix Spike Duplicate Data	____	____	_____	_____
11. **Miscellaneous Data**				
Original preparation and analysis forms or copies of preparation and analysis logbook pages	____	____	_____	_____
Internal sample and sample extract transfer chain-of-custody records	____	____	_____	_____
Screening records	____	____	_____	_____
All instrument output, including strip charts from screening activities (describe or list)				
_____	____	____	_____	_____
_____	____	____	_____	_____
12. **EPA Shipping/Receiving Documents**				
Airbills (No. of shipments ___)	____	____	_____	_____
Chain-of-Custody Records	____	____	_____	_____
Sample Tags			_____	_____
Sample Log-In Sheet (Lab & DC1)	____	____	_____	_____
Miscellaneous Shipping/Receiving Records (describe or list)				
_____	____	____	_____	_____
_____	____	____	_____	_____
13. **Internal Lab Sample Transfer Records and Tracking Sheets** (describe or list)				
_____	____	____	_____	_____
_____	____	____	_____	_____

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14. **Other Records** (describe or list)				
Telephone Communication Log	____	____	_____	_____
_____	____	____	_____	_____
_____	____	____	_____	_____

15. **Comments:** _____
_____
_____

Completed by: _____ _____ _____
(REAP Lab) (Signature) (Printed Name/Title) (Date)

Verified by: _____ _____ _____
(REAP Lab) (Signature) (Printed Name/Title) (Date)

Audited by: _____ _____ _____
(EPA) (Signature) (Printed Name/Title) (Date)