TETRA TECH, INC.

August 3, 2017

Sara Ziff, P.E.
Project Manager
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Subject: Supplemental PCB Sampling Results
Corporation Yard Site, Richmond Field Station
University of California, Berkeley

Dear Ms. Ziff:

On behalf of the University of California, Berkeley, Tetra Tech, Inc. conducted supplemental sampling events related to the polychlorinated biphenyl (PCB) contamination identified at the Corporation Yard Site, at the Richmond Field Station, as identified through previous submittals. This letter summarizes the sampling approach and results documented previously through several email communications during June 2017. The sampling consisted of four groundwater samples, four discrete soil samples, one incremental soil sample (in duplicate), one dry sediment sample, and two concrete wipe samples. The Corporation Yard Site is presented on Figure 1; sample locations are presented on Figure 2.

All samples were analyzed for PCBs by U.S EPA Method 8082; soil, dry sediment, and concrete wipe samples were extracted through U.S. EPA Method 3640C. A summary of the sampling rationale is provided below.

Sample Type	Rationale	Date Collected
Groundwater	Assess PCB contamination in the four piezometers at the Corporation Yard Site: B120, B197R, B178, and B185.	June 6, 2017
Soil – Waste Profile	Characterize PCB contamination for waste profiling at four discrete locations adjacent to borehole CY26.	June 6, 2017
Soil – Upgradient of B185 Storm Drain Inlet	Assess PCB contamination in a 4.5 by 4.5-meter area (approximately 15 by 15-foot) immediately upgradient of the sole storm inlet drain within the Corporation Yard Site, located southwest of B185.	June 6, 2017
Soil - Dry Sediment in B185 Storm Drain Inlet	Assess PCB contamination in the B185 storm drain inlet.	June 21, 2017
Concrete Wipe – B185 Storm Drain Inlet	Assess PCB contamination along two of the concrete sidewalls in the B185 storm drain inlet.	June 21, 2017

Groundwater Sampling

Groundwater samples were collected according to the sampling protocols identified in the Final Phase I Groundwater Sampling, Field Sampling Workplan, dated June 2, 2010. The groundwater from each piezometer was collected through sterile polyethylene and silicon tubing using a low-flow, peristaltic pump. The discharge from the pump ran through a flow cell that measured pH, temperature, specific conductance, turbidity, dissolved oxygen, total dissolved solids, salinity, and oxygen reducing potential. Samples were filtered in the field and submitted for laboratory analysis of PCBs in unpreserved, 1-liter amber bottles. Samples were immediately placed in a cooler containing ice and delivered to Curtis and Tompkins laboratory in Berkeley, California, using chain-of-custody procedures.

The purge water generated during sampling was placed in a labelled 55-gallon drum at the fenced storage location west of Building 110. This drum also contained purge water from groundwater sampling events in April 2017 from the same piezometers. Disposable gloves, tubing, and paper towels used for sampling were placed in a bag, sealed, and disposed of by UC Berkeley as solid waste.

All groundwater sample results were non-detect for PCBs. Sample results and reporting limits are provided on Table 1. Piezometer locations are presented on Figure 1. The laboratory analytical reports are included as Attachment 1.

Soil Sampling: Waste Profiling

Four discrete soil samples were collected adjacent to borehole CY26, located south of B120. Previous sample results at CY26 indicated total PCBs at 110 milligrams per kilogram (mg/kg). Previous samples collected to the northwest, west, and southwest of CY26 indicated PCB concentrations less than 50 mg/kg, the Toxic Substances Control Act (TSCA) limit requiring specific waste disposal requirements. No samples had been collected to the northeast or southeast of CY26. Samples CY26NE-5 and CY26NE-10 were collected 5 and 10 feet northeast from CY26. Samples CY26SE-5 and CY26SE-10 were collected 5 and 10 feet southeast of CY26.

Discrete soil samples were collected from 0 to 3 inches below the shallow gravel subgrade. Samples were collected with disposable plastic trowels, which were discarded between each sample location. Soil samples were placed in labelled 4-ounce glass jars provided by the laboratory. Samples were wrapped with protective bubble wrap material, placed into re-sealable plastic bags, immediately placed in a cooler containing ice, and delivered to Curtis and Tompkins laboratory in Berkeley, California, using chain-of-custody procedures.

No water was generated during waste profile sampling activities since all equipment was disposable and discarded between sample locations. Trowels, gloves, and paper towels used for sampling were placed in a bag, sealed, and disposed of by UC Berkeley as solid waste.

Total PCB sample results were 19 mg/kg at CY26NE-5, 120 mg/kg at CY26NE-10, 73 mg/kg at CY26SE-5, and 6.2 mg/kg at CY26SE-10. Sample results and reporting limits are provided on Table 1. Soil sample locations and results are presented on Figure 2. The laboratory analytical reports are included as Attachment 1.

Soil Sampling: Upgradient of B185 Storm Drain Inlet

One soil sample was collected in field duplicate from a 4.5 by 4.5-meter area located adjacent and north northeast to the B185 storm drain inlet. This location was selected to best represent soil conditions immediately upgradient of the storm drain inlet, although the topography at the storm drain inlet is very flat. The samples were collected using incremental sampling methodology (ISM) to best characterize the area. The area was marked with flags into 0.5 by 0.5-meter grids – denoted by nine grids per side – resulting in 81 orthogonal grids. An increment was sampled from the same relative location within each of the 81 grids. Exhibit 1 shows the grid for the ISM sample collection.

Exhibit 1. B185 Storm Drain Inlet Incremental Sample Grid

The 81 increments were collected with a disposable trowel with the goal of collecting approximately 20 grams of soil per increment, resulting in a single ISM sample of 1.5 to 2 kilograms. Increments were placed directly into a 1-gallon re-sealable plastic bag and labeled. A second field duplicate was collected in the same manner as the first, with each increment collected from a different pre-determined location within each of the 81 grids.

The samples were wrapped with protective bubble wrap material, placed into secondary re-sealable plastic bags, immediately placed in a cooler containing ice, and delivered to Curtis and Tompkins laboratory in Berkeley, California, using chain-of-custody procedures.

No water was generated during ISM sampling activities since all equipment was disposable and discarded between the two ISM samples. Trowels, gloves, and paper towels used during sampling were placed in a bag, sealed, and disposed of by UC Berkeley as solid waste.

Total PCB sample results from the duplicate samples were 1.7 and 2.4 mg/kg, both reported as Aroclor 1254; all other Aroclors were reported as non-detect. Sample results and reporting limits are provided on

Table 1. Soil sample locations and results are presented on Figure 2. The laboratory analytical reports are included as Attachment 1.

Soil Sampling: Dry Sediment in B185 Storm Drain Inlet

The B185 storm drain inlet construction consists of an outer grate, a concrete drop box approximately 1.5 feet deep, and a drop pipe which leads down to the main storm drain line which extends underground southwest from B185. A small amount of dry sediment was present in the concrete drop box surrounding the drop pipe.

This dry sediment was scraped into a single small soil pile and collected with a disposable plastic trowel into a 4-ounce glass jar provided by the laboratory. The sample was wrapped with protective bubble wrap material, placed into a re-sealable plastic bag, immediately placed in a cooler containing ice, and delivered to Curtis and Tompkins laboratory in Berkeley, California, using chain-of-custody procedures. Exhibit 2 shows the B185 storm drain inlet box.

Exhibit 2. B185 Storm Drain Inlet Drop Box.

No water was generated during sampling activities since all equipment was disposable and discarded. Trowels, gloves, and paper towels used during sampling were placed in a bag, sealed, and disposed of by UC Berkeley as solid waste.

Total PCB sample results were 0.2 mg/kg. Sample results and reporting limits are provided on Table 1. Soil sample locations and results are presented on Figure 2. The laboratory analytical reports are included as Attachment 1.

Concrete Wipe Sampling: B185 Storm Drain Inlet

Wipe samples were collected from two of the concrete walls of the B185 storm drain inlet. Wipe samples were collected using Dexsil PCB wipe test kit sampling equipment with 100 square centimeter circular templates. The templates were taped to the north and east concrete walls of the drop inlet basin. Exhibit 3 shows the template area for the wipe sample.

Exhibit 3. Dexsil Template for Concrete Wipe Area (100 square centimeters).

Following the Dexsil instructions, each collection gauze was saturated with hexane from kit vials and the template areas were immediately scoured with the wetted gauze, and placed in vials. The vials were wrapped with protective bubble wrap material, placed into re-sealable plastic bags, immediately placed in a cooler containing ice, and delivered to Curtis and Tompkins laboratory in Berkeley, California, using chain-of-custody procedures.

No water was generated during wipe sampling activities since all equipment was disposable and discarded between the two wipe sample locations. Empty hexane containers, gauze, gloves, and paper towels used during sampling were placed in a bag, sealed, and disposed of by UC Berkeley as solid waste.

Both wipe sample results were reported as non-detect at reporting limits of 0.25 micrograms per 100 square centimeters (µg/s) for all Aroclors except Aroclor 1221 with a reporting limit of 0.50 µg/s. Sample results and reporting limits are provided on Table 1. B185 storm drain inlet location is presented on Figure 2. The laboratory analytical reports are included as Attachment 1.

Summary

- All groundwater sample results from the piezometers in the Corporation Yard were nondetect.
- Waste profile soil sample results bounding previous contamination at CY26 were 19 mg/kg at CY26NE-5, 120 mg/kg at CY26NE-10, 73 mg/kg at CY26SE-5, and 6.2 mg/kg at CY26SE-10.
- Total PCB sample duplicate results from upgradient of the B185 storm drain inlet were 1.7 and 2.4 mg/kg, both reported as Aroclor 1254; all other Aroclors were reported as non-detect.
- Total PCB sample results from the dry sediment within the B185 storm drain inlet were 0.2 mg/kg.
- Two concrete wipe samples collected inside the B185 storm drain inlet were reported as nondetect.

If you have any questions or comments regarding this submittal, please call me at (415) 497-9060.

Sincerely,

Jason Brodersen, P.G.
Project Manager

Cc: Lynn Nakashima, Department of Toxic Control Branch
Karl Hans, UC Berkeley
Bill Marsh, Edgcomb Law Group, LLP

Enclosures: Table 1, Sample Results
Figure 1, Site Location Map
Figure 2, Sample Results Map
Attachment 1, Laboratory Analytical Reports

TABLE 1
PCB SAMPLING RESULTS

Sample Type	PCBs							
	Aroclor 1016	**Aroclor 1221**	**Aroclor 1232**	**Aroclor 1242**	**Aroclor 1248**	**Aroclor 1254**	**Aroclor 1260**	**Total PCBs**
Groundwater: Piezometers within Corporation Yard (µg/L) Sampling Date: June 6, 2017								
B120 Piezometer	*0.19 U*	*0.38 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	NA
B178 Piezometer	*0.19 U*	*0.38 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	NA
B185 Piezometer	*0.19 U*	*0.38 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	NA
B197R Piezometer	*0.19 U*	*0.38 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	*0.19 U*	NA
Waste Profile: Surrounding CY26 (mg/kg) Sampling Date: June 6, 2017								
CY26NE-5	*4.0 U*	*8.0 U*	*4.0 U*	*4.0 U*	*4.0 U*	**19**	*4.0 U*	**19**
CY26NE-10	*2.0 U*	*4.0 U*	*2.0 U*	*2.0 U*	*2.0 U*	**120**	*2.0 U*	**120**
CY26SE-5	*2.0 U*	*4.0 U*	*2.0 U*	*2.0 U*	*2.0 U*	**73**	*2.0 U*	**73**
CY26SE-10	*2.0 U*	*4.0 U*	*2.0 U*	*2.0 U*	*2.0 U*	**6.2**	*2.0 U*	**6.2**
Storm Drain Inlet: Upgradient Soil (mg/kg) Sampling Date: June 6, 2017								
B185-SI-ISM1	*0.020 U*	*0.040 U*	*0.020 U*	*0.020 U*	*0.020 U*	**1.7**	*0.020 U*	**1.7**
B185-SI-ISM2	*0.100 U*	*0.200 U*	*0.100 U*	*0.100 U*	*0.100 U*	**2.4**	*0.100 U*	**2.4**
B185 Storm Drain Inlet: Dry Sediment (mg/kg) Sampling Date: June 21, 2017								
B185-SI2	*0.0096 U*	*0.019 U*	*0.0096 U*	*0.0096 U*	*0.0096 U*	0.200	*0.0096 U*	0.200
B185 Storm Drain Inlet: Concrete Wipe Samples (µg/s) Sampling Date: June 21, 2017								
B185 Wipe E	*0.25 U*	*0.50 U*	*0.25 U*	*0.25 U*	*0.25 U*	*0.25 U*	*0.25 U*	NA
B185 Wipe N	*0.25 U*	*0.50 U*	*0.25 U*	*0.25 U*	*0.25 U*	*0.25 U*	*0.25 U*	NA

Notes:

0.25 U Italicized, gray results are nondetect with laboratory reporting limits listed

2.4 **Bold** indicates exceedence of Toxic Substances Control Act (TSCA) criteria for high occupancy areas with no cap of 1 mg/kg, per 40 CFR 761.61 (a)(4)(i)(A).

120 **Bold Underline** indicates exceedence of TSCA criteria of 50 mg/kg for bulk PCB remediation wastes to be disposed of in a hazardous waste landfill permitted under Section 3004 or 3006 of Resources, Conservation, and Recovery Act (RCRA), per 40 CFR 761.61 (a)(5)(i)(B)(2)(iii).

µg/s Micrograms per 100 square centimeters
µg/L Micrograms per liter
mg/kg Milligrams per kilogram
NA Not applicable; PCB total not compiled if all aroclors were nondetect

Total PCBs do not include nondetect results

Regatta 3200 3300
280B
280A
400 C
400 A & B
201 EPA Lab
454
452
453
451
490
450
491
482
480
486
460
Guard shack
478
474
445
484
488
485
487
473
421
420
472
471 Green House
470
470A
Shade House
475
HFS tanks
HFS\
167
165
164
38
162
161
277
160
159
158
154
151
180
179
155
177
275
276
153
152
150
176
175
149
121
118
125
116
114
197
117
120
198
195
190
194
196
128
113
111
112
178
185
163
110
102
300
Concrete Pad
Asphalt Pad B
Asphalt Pad C
Corporation Yard
REGATTA BOULEVARD
ROBIN DRIVE
MEAKER AVENUE
SOUTH 34TH STREET
MEAKER AVENUE
ERLANDSON STREET
HIGHWAY 580
MEADE STREET
CARLSON BOULEVARD
SOUTH 32ND STREET
SYCAMORE AVENUE
OWL WAY
CROW DRIVE
WREN DRIVE
PLOVER DRIVE
LARK DRIVE
AVOCET WAY
EGRET WAY
EAST MONTGOMERY AVENUE
SOUTH 46TH STREET
STARLING WAY
SOUTH 32ND STREET
REGATTA BOULEVARD
BAY HARBOR DRIVE
SEA ISLE DRIVE
ROCKPORT COURT
CRYSTAL COVE COURT
WINDJAMMER COURT
SAN FRANCISCO BAY TRAIL

Area Boundaries

- Corporation Yard
- Fenceline
- Asphalt/Concrete Pads
- Buildings
- Surface Water
- Portion of RFS Property Subject to DTSC Order
- Richmond Bay Campus

N

0 300 600

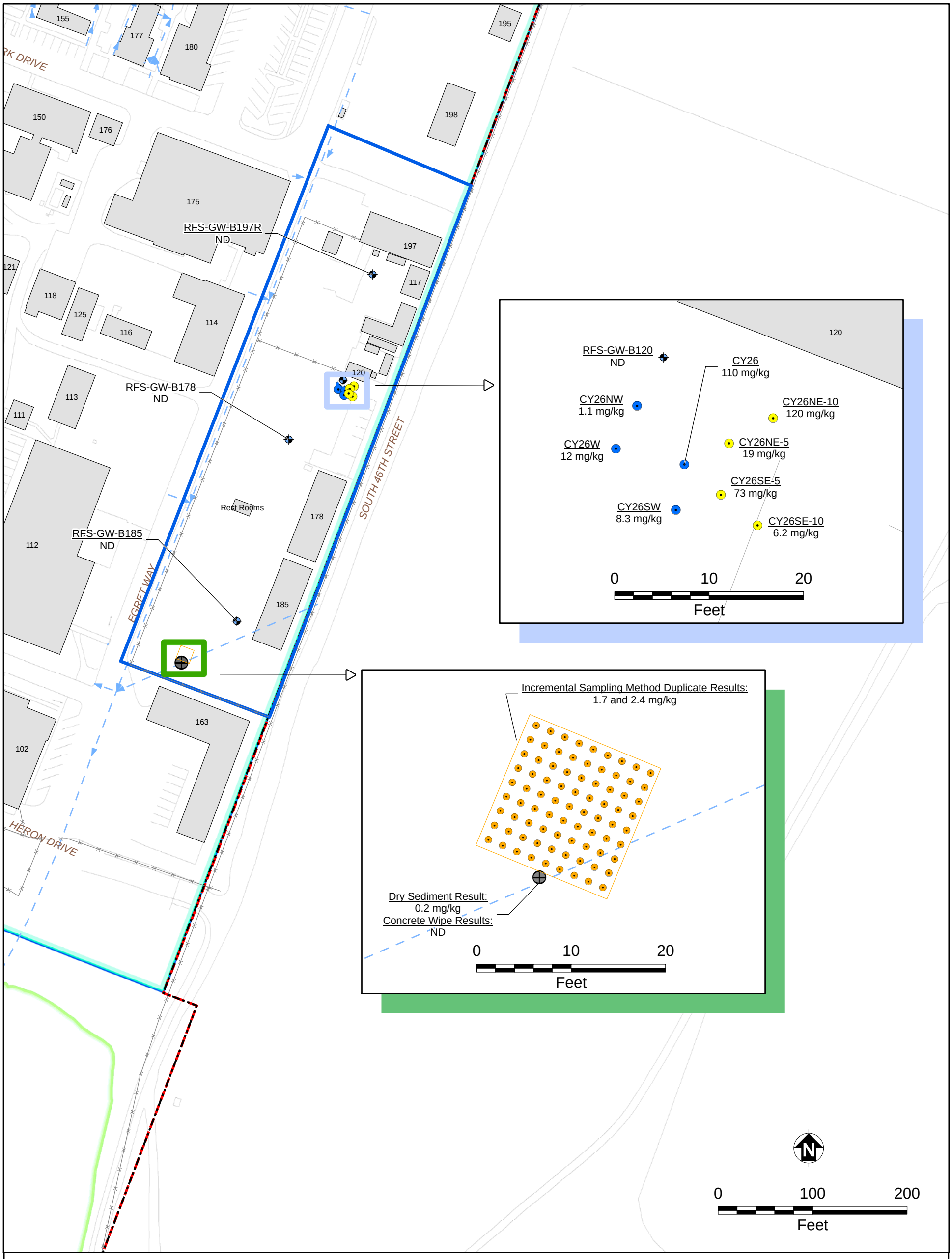
Feet

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 1
SITE LOCATION MAP

8/1/2017 C:\misc_GIS\Richmond_Field_Station\Projects\Corporation Yard\SiteMap.mxd TtEMI-OAK michelle.handley



- Fenceline
- Asphalt/Concrete Pads
- Buildings
- Marsh Boundary
- Surface Water
- RES Area within the Site
- Portion of RFS Property Subject to DTSC Order
- Richmond Bay Campus
- Roads and other Landscape Features
- Corporation Yard

- Groundwater Samples
- ISM Soil Sample (Duplicate)
- Previous Discrete Soil Samples
- Current Discrete Soil Samples
- Storm Drain Inlet Wipe and Sediment Samples

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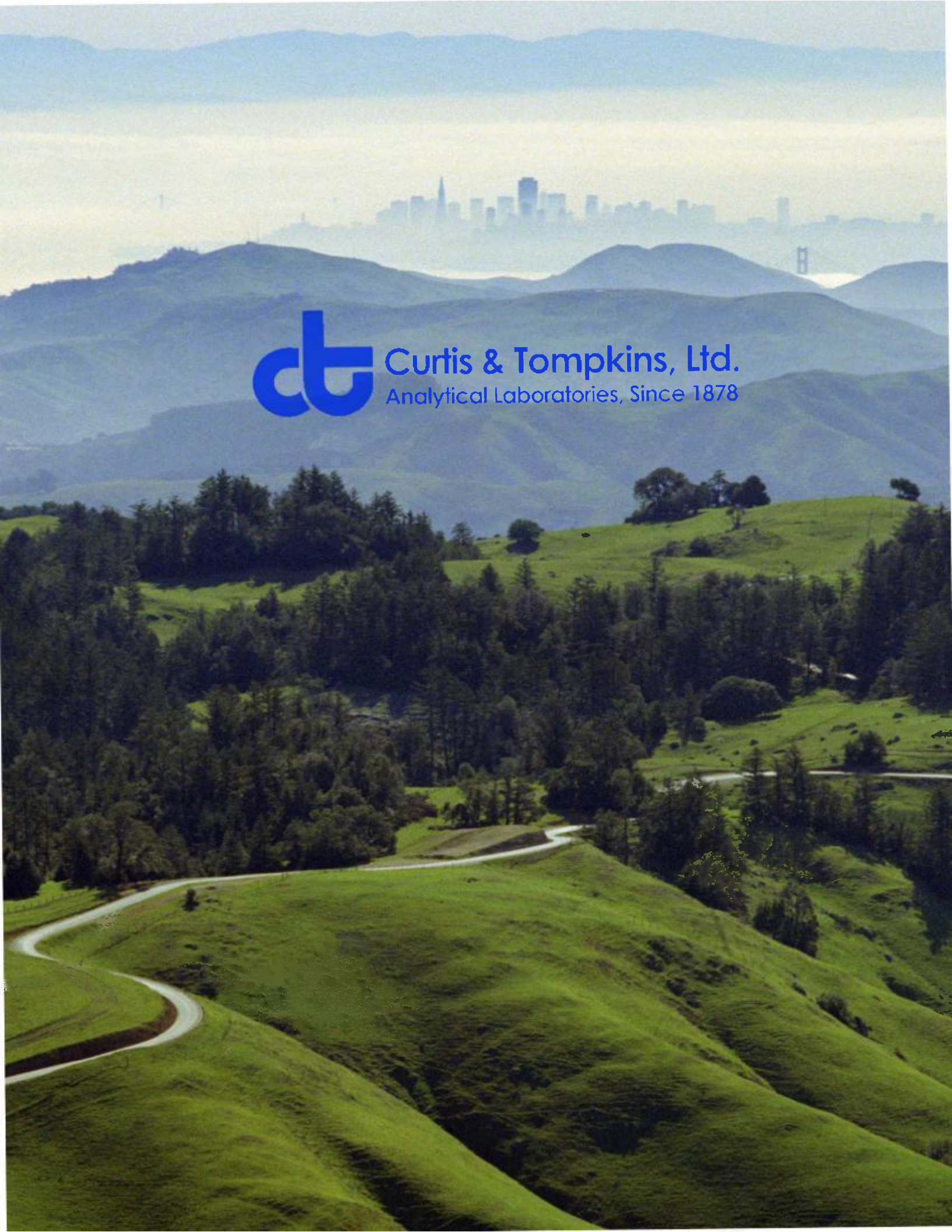
Richmond Field Station Site
University of California, Berkeley

FIGURE 2
SAMPLE RESULTS MAP

8/1/2017 C:\misc_GIS\Richmond_Field_Station\Projects\Corporation Yard\SampleResults.mxd TtEMI-OAK michelle.handley

ATTACHMENT 1

LABORATORY ANALYTICAL REPORTS


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 289619
ANALYTICAL REPORT
PCBs
Matrix: Water

Tetra Tech EMI	Project : 103S225330.02
1999 Harrison Street	Location : RFS Corporation Yard PCB Sampling
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
20170606B185	289619-001
20170606B178	289619-002
20170606B197R	289619-003
20170606B120	289619-004

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/13/2017

Will Rice
Project Manager
will.rice@ctberk.com
(510) 204-2221 Ext 13102

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
PCBS (EPA 8082)
WATER

Laboratory number:	**289619**
Client:	**Tetra Tech EMI**
Project:	**103S225330.02**
Location:	**RFS Corporation Yard PCB Sampling**
Request Date:	**06/06/17**
Samples Received:	**06/06/17**

This data package contains sample and QC results for four water samples, requested for the above referenced project on 06/06/17. See attached cooler receipt form for any sample receipt problems or discrepancies.

PCBs (EPA 8082) Water:

All samples underwent sulfuric acid cleanup using EPA Method 3665A.

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

High response was observed for Aroclor-1260 in the CCV analyzed 06/12/17 21:08; this analyte was not detected at or above the RL in the associated samples.

No other analytical problems were encountered.

Chain of Custody

289619

Tetra Tech EM Inc.

Chain of Custody Record No. 7215

TETRA TECH
1999 Harrison Street, Ste 500
Oakland, CA 94612-3599

Lab PO#:

Lab: Curtis & Tompkins

Project name: 2017 RFS Groundwater

TtEMI technical contact: Deborah Kulsal

Field samplers: Cora LeMar

Project (CTO) number:

TtEMI project manager: Jason Brodersen

Field samplers' signatures: Cora LeMar

	Sample ID	Sample Location (Pt. ID)	Date	Time	Matrix	MS / MSD	40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	bag	VOA	SVOA	Pest/PCBs 8082	Metals	TPH Purgeables	TPH Extractables	3540C extraction	incremental subsample	archive *
1	20170606 B185		6/6/17	9:06	water		1								X						
2	20170606 B178			10:22			1								X						
3	20170606 B197R			11:37			1								X						
4	20170606 B196			13:02			1								X						
5	RFS-B185-SI-ISM2		6/6/17	11:46	soil						1	x1			X				X	X	
6	RFS-B185-SI-ISM1			11:45							1	x1			X				X	X	
7	RFS-CY26NE-10			13:10							1				X				X		X
8	RFS-CY26SE-10			12:45							1				X				X		X
9	RFS-CY26NE-5			12:55							1				X				X		
10	RFS-CY26SE-5			12:40							1				X				X		

	Name (print)	Company Name	Date	Time
Relinquished by: Cora LeMar	Cora LeMar	Tetra Tech	6/6/17	14:10
Received by: Pat Gonzalez	Pat Gonzalez	CET	6/6/17	14:10
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks:

5 day TAT

* as marked above archive until directed by Tetra Tech

Fed Ex #:

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 289619 Date Received 6/6/17 Number of coolers 1
Client Petra Tech Project 2017 RFS Groundwater

Date Opened 6/6/17 By (print) VC (sign) VC
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labelled ↓ By (print) _____ (sign) _____

1. Did cooler come with a shipping slip (airbill, etc) _____ YES (NO)
Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

☒ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

☐ Temperature blank(s) included? ☐ Thermometer# _____ ☐ IR Gun# _____

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES (NO)
If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ YES NO
13. Do the sample labels agree with custody papers? _____ YES NO
14. Was sufficient amount of sample sent for tests requested? _____ YES NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A
17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A
20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
If YES, Who was called? _____ By _____ Date: _____

COMMENTS _____

Rev 13, 6/01/16

Results & QC Summary

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170606B185	Batch#:	248524
Lab ID:	289619-001	Sampled:	06/06/17
Matrix:	Water	Received:	06/06/17
Units:	ug/L	Prepared:	06/07/17
Diln Fac:	1.000	Analyzed:	06/12/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.19	0.061
Aroclor-1221	ND	0.38	0.12
Aroclor-1232	ND	0.19	0.054
Aroclor-1242	ND	0.19	0.060
Aroclor-1248	ND	0.19	0.061
Aroclor-1254	ND	0.19	0.059
Aroclor-1260	ND	0.19	0.051

Surrogate	%REC	Limits
Decachlorobiphenyl	73	28-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170606B178	Batch#:	248524
Lab ID:	289619-002	Sampled:	06/06/17
Matrix:	Water	Received:	06/06/17
Units:	ug/L	Prepared:	06/07/17
Diln Fac:	1.000	Analyzed:	06/12/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.19	0.061
Aroclor-1221	ND	0.38	0.12
Aroclor-1232	ND	0.19	0.054
Aroclor-1242	ND	0.19	0.060
Aroclor-1248	ND	0.19	0.061
Aroclor-1254	ND	0.19	0.059
Aroclor-1260	ND	0.19	0.051

Surrogate	%REC	Limits
Decachlorobiphenyl	90	28-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170606B197R	Batch#:	248524
Lab ID:	289619-003	Sampled:	06/06/17
Matrix:	Water	Received:	06/06/17
Units:	ug/L	Prepared:	06/07/17
Diln Fac:	1.000	Analyzed:	06/12/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.19	0.061
Aroclor-1221	ND	0.38	0.12
Aroclor-1232	ND	0.19	0.054
Aroclor-1242	ND	0.19	0.060
Aroclor-1248	ND	0.19	0.061
Aroclor-1254	ND	0.19	0.059
Aroclor-1260	ND	0.19	0.051

Surrogate	%REC	Limits
Decachlorobiphenyl	74	28-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170606B120	Batch#:	248524
Lab ID:	289619-004	Sampled:	06/06/17
Matrix:	Water	Received:	06/06/17
Units:	ug/L	Prepared:	06/07/17
Diln Fac:	1.000	Analyzed:	06/12/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.19	0.061
Aroclor-1221	ND	0.38	0.12
Aroclor-1232	ND	0.19	0.054
Aroclor-1242	ND	0.19	0.060
Aroclor-1248	ND	0.19	0.061
Aroclor-1254	ND	0.19	0.059
Aroclor-1260	ND	0.19	0.051

Surrogate	%REC	Limits
Decachlorobiphenyl	86	28-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC888694	Batch#:	248524
Matrix:	Water	Prepared:	06/06/17
Units:	ug/L	Analyzed:	06/08/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.20	0.064
Aroclor-1221	ND	0.40	0.13
Aroclor-1232	ND	0.20	0.057
Aroclor-1242	ND	0.20	0.063
Aroclor-1248	ND	0.20	0.064
Aroclor-1254	ND	0.20	0.063
Aroclor-1260	ND	0.20	0.054

Surrogate	%REC	Limits
Decachlorobiphenyl	100	28-120

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3520C
Project#:	103S225330.02	Analysis:	EPA 8082
Matrix:	Water	Batch#:	248524
Units:	ug/L	Prepared:	06/06/17
Diln Fac:	1.000	Analyzed:	06/08/17

Type: BS Lab ID: QC888695

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	2.500	2.357	94	62-127
Aroclor-1260	2.500	2.303	92	60-135

Surrogate	%REC	Limits
Decachlorobiphenyl	80	28-120

Type: BSD Lab ID: QC888696

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	2.500	2.542	102	62-127	8	29
Aroclor-1260	2.500	2.925	117	60-135	24	40

Surrogate	%REC	Limits
Decachlorobiphenyl	113	28-120

RPD= Relative Percent Difference

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 289619
ANALYTICAL REPORT
PCBs
Matrix: Soil

Tetra Tech EMI	Project : 103S225330.02
1999 Harrison Street	Location : RFS Corporation Yard PCB Sampling
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
RFS-B185-SI-ISM2	289619-005
RFS-B185-SI-ISM1	289619-006
RFS-CY26NE-10	289619-007
RFS-CY26SE-10	289619-008
RFS-CY26NE-5	289619-009
RFS-CY26SE-5	289619-010

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: Will Rice Date: 06/13/2017

Will Rice
Project Manager
will.rice@ctberk.com
(510) 204-2221 Ext 13102

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
PCBS (EPA 8082)
SOIL

Laboratory number:	**289619**
Client:	**Tetra Tech EMI**
Project:	**103S225330.02**
Location:	**RFS Corporation Yard PCB Sampling**
Request Date:	**06/06/17**
Samples Received:	**06/06/17**

This data package contains sample and QC results for six soil samples, requested for the above referenced project on 06/06/17. See attached cooler receipt form for any sample receipt problems or discrepancies.

Matrix spikes were not performed for this analysis in batch 248560 due to insufficient sample amount.

PCBs (EPA 8082) Soil:

All samples underwent sulfuric acid cleanup using EPA Method 3665A.

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

High response was observed for Aroclor-1260 in the CCV analyzed 06/12/17 21:08; affected data was qualified with "b".

No other analytical problems were encountered.

Chain of Custody

289619

Tetra Tech EM Inc.

Chain of Custody Record No. 7215

Page 1 of 1

TETRA TECH
1999 Harrison Street, Ste 500
Oakland, CA 94612-3599

Lab PO#:

Lab: Curtis & Tompkins

Project name: 2017 RFS Groundwater

TtEMI technical contact: Deborah Kulsal

Field samplers: Cora LeMar

Project (CTO) number:

TtEMI project manager: Jason Brodersen

Field samplers' signatures: Cora LeMar

	Sample ID	Sample Location (Pt. ID)	Date	Time	Matrix	MS / MSD	No./Container Types: 40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	bag	Preservative Added: NONE	Analysis Required: VOA	SVOA	Pest/PCBs 8082	Metals	TPH Purgeables	TPH Extractables	3540C extraction	incremental subsample	Archive *
1	20170606 B185		6/6/17	9:06	water		1									X						
2	20170606 B178			10:22			1									X						
3	20170606 B197R			11:37			1									X						
4	20170606 B196			13:02			1									X						
5	RFS-B185-SI-ISM2		6/6/17	11:46	soil						1	x1				X				X	X	
6	RFS-B185-SI-ISM1			11:45							1	x1				X				X	X	
7	RFS-CY26NE-10			13:10							1					X				X		X
8	RFS-CY26SE-10			12:45							1					X				X		X
9	RFS-CY26NE-5			12:55							1					X				X		
10	RFS-CY26SE-5			12:40							1					X				X		

	Name (print)	Company Name	Date	Time
Relinquished by: Cora LeMar	Cora LeMar	Tetra Tech	6/6/17	14:10
Received by: Pat Gonzalez	Pat Gonzalez	CT	6/6/17	14:10
Relinquished by:				
Received by:				
Relinquished by:				
Received by:				

Turnaround time/remarks:

5 day TAT

* as marked above archive until directed by Tetra Tech

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT CHECKLIST

Curtis & Tompkins, Ltd.

Login # 289619 Date Received 6/6/17 Number of coolers 1
Client Petra Tech Project 2017 RFS Groundwater

Date Opened 6/6/17 By (print) VC (sign) VC
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labelled ↓ By (print) _____ (sign) _____

1. Did cooler come with a shipping slip (airbill, etc) _____ YES (NO)
Shipping info _____

2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
How many _____ Name _____ Date _____
2B. Were custody seals intact upon arrival? _____ YES NO (N/A)
3. Were custody papers dry and intact when received? _____ (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? _____ (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe) _____

☒ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☒ Wet ☐ Blue/Gel ☐ None Temp(°C) _____

☐ Temperature blank(s) included? ☐ Thermometer# _____ ☐ IR Gun# _____

☒ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? _____ YES (NO)
If YES, what time were they transferred to freezer? _____
9. Did all bottles arrive unbroken/unopened? _____ (YES) NO
10. Are there any missing / extra samples? _____ YES (NO)
11. Are samples in the appropriate containers for indicated tests? _____ (YES) NO
12. Are sample labels present, in good condition and complete? _____ YES NO
13. Do the sample labels agree with custody papers? _____ YES NO
14. Was sufficient amount of sample sent for tests requested? _____ YES NO
15. Are the samples appropriately preserved? _____ YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? _____ YES NO N/A
17. Did you document your preservative check? (pH strip lot# _____) YES NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? _____ YES NO N/A
19. Did you change the hold time in LIMS for preserved terracores? _____ YES NO N/A
20. Are bubbles > 6mm absent in VOA samples? _____ YES NO N/A
21. Was the client contacted concerning this sample delivery? _____ YES (NO)
If YES, Who was called? _____ By _____ Date: _____

COMMENTS _____

Rev 13, 6/01/16

Results & QC Summary

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-B185-SI-ISM2	Batch#:	248560
Lab ID:	289619-005	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	5.000		

Analyte	Result	RL	MDL
Aroclor-1016	ND	100	36
Aroclor-1221	ND	200	97
Aroclor-1232	ND	100	47
Aroclor-1242	ND	100	44
Aroclor-1248	ND	100	46
Aroclor-1254	2,400	100	37
Aroclor-1260	ND	100	23

Surrogate	%REC	Limits
Decachlorobiphenyl	97	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-B185-SI-ISM1	Batch#:	248560
Lab ID:	289619-006	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	1.000		

Analyte	Result	RL	MDL
Aroclor-1016	ND	20	7.1
Aroclor-1221	ND	40	19
Aroclor-1232	ND	20	9.3
Aroclor-1242	ND	20	8.6
Aroclor-1248	ND	20	9.1
Aroclor-1254	1,700	20	7.3
Aroclor-1260	ND	20	4.6

Surrogate	%REC	Limits
Decachlorobiphenyl	106	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-CY26NE-10	Batch#:	248560
Lab ID:	289619-007	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	100.0		

Analyte	Result	RL	MDL
Aroclor-1016	ND	2,000	710
Aroclor-1221	ND	4,000	1,900
Aroclor-1232	ND	2,000	940
Aroclor-1242	ND	2,000	870
Aroclor-1248	ND	2,000	920
Aroclor-1254	120,000	2,000	740
Aroclor-1260	ND	2,000	470

Surrogate	%REC	Limits
Decachlorobiphenyl	DO	38-158

DO= Diluted Out
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-CY26SE-10	Batch#:	248560
Lab ID:	289619-008	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	10.00		

Analyte	Result	RL	MDL
Aroclor-1016	ND	200	71
Aroclor-1221	ND	400	190
Aroclor-1232	ND	200	93
Aroclor-1242	ND	200	86
Aroclor-1248	ND	200	91
Aroclor-1254	6,200	200	73
Aroclor-1260	ND	200	46

Surrogate	%REC	Limits
Decachlorobiphenyl	136	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-CY26NE-5	Batch#:	248560
Lab ID:	289619-009	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	20.00		

Analyte	Result	RL	MDL
Aroclor-1016	ND	400	140
Aroclor-1221	ND	800	380
Aroclor-1232	ND	400	190
Aroclor-1242	ND	400	170
Aroclor-1248	ND	400	180
Aroclor-1254	19,000	400	150
Aroclor-1260	ND	400	93

Surrogate	%REC	Limits
Decachlorobiphenyl	DO	38-158

DO= Diluted Out
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	RFS-CY26SE-5	Batch#:	248560
Lab ID:	289619-010	Sampled:	06/06/17
Matrix:	Soil	Received:	06/06/17
Units:	ug/Kg	Prepared:	06/07/17
Basis:	as received	Analyzed:	06/13/17
Diln Fac:	100.0		

Analyte	Result	RL	MDL
Aroclor-1016	ND	2,000	710
Aroclor-1221	ND	4,000	1,900
Aroclor-1232	ND	2,000	930
Aroclor-1242	ND	2,000	860
Aroclor-1248	ND	2,000	910
Aroclor-1254	73,000	2,000	730
Aroclor-1260	ND	2,000	460

Surrogate	%REC	Limits
Decachlorobiphenyl	DO	38-158

DO= Diluted Out
ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC888811	Batch#:	248560
Matrix:	Soil	Prepared:	06/07/17
Units:	ug/Kg	Analyzed:	06/13/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	20	7.1
Aroclor-1221	ND	40	19
Aroclor-1232	ND	20	9.4
Aroclor-1242	ND	20	8.7
Aroclor-1248	ND	20	9.2
Aroclor-1254	ND	20	7.4
Aroclor-1260	ND	20	4.7

Surrogate	%REC	Limits
Decachlorobiphenyl	51	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	289619	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	248560
Units:	ug/Kg	Prepared:	06/07/17
Diln Fac:	1.000	Analyzed:	06/12/17

Type: BS Lab ID: QC888812

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	504.0	523.2	104	61-152
Aroclor-1260	504.0	489.6 b	97	62-158

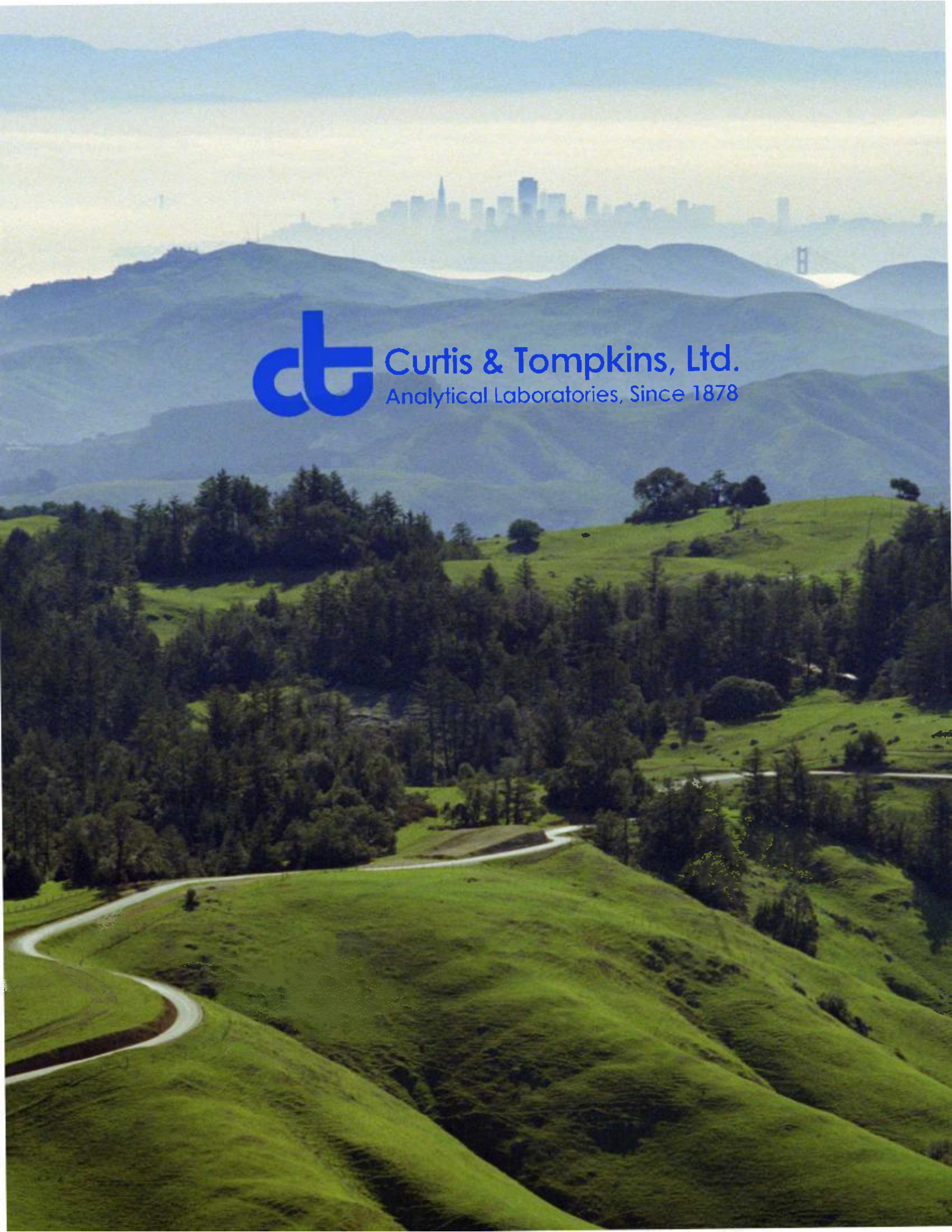
Surrogate	%REC	Limits
Decachlorobiphenyl	93	38-158

Type: BSD Lab ID: QC888813

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	500.0	497.8	100	61-152	4	44
Aroclor-1260	500.0	476.6 b	95	62-158	2	32

Surrogate	%REC	Limits
Decachlorobiphenyl	89	38-158

b= See narrative
RPD= Relative Percent Difference


Curtis & Tompkins, Ltd.
Analytical Laboratories, Since 1878

Curtis & Tompkins, Ltd., Analytical Laboratories, Since 1878
2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 290013
ANALYTICAL REPORT
PCBs
Matrix: Soil

Tetra Tech EMI	Project : 103S225330.02
1999 Harrison Street	Location : RFS Corporation Yard PCB Sampling
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
20170621-RFS-B185-SI2	290013-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/26/2017

Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com
(510) 204-2225 Ext 13101

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
PCBS (EPA 8082)
SOIL

Laboratory number:	**290013**
Client:	**Tetra Tech EMI**
Project:	**103S225330.02**
Location:	**RFS Corporation Yard PCB Sampling**
Request Date:	**06/21/17**
Samples Received:	**06/21/17**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 06/21/17. See attached cooler receipt form for any sample receipt problems or discrepancies.

Matrix spikes were not performed for this analysis in batch 248999 due to insufficient sample amount.

PCBs (EPA 8082) Soil:

All samples underwent sulfuric acid cleanup using EPA Method 3665A.

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

High response was observed for Aroclor-1260 in the CCV analyzed 06/23/17 16:22; affected data was qualified with "b".

High response was observed for Aroclor-1016 in the CCV analyzed 06/23/17 21:27; affected data was qualified with "b".

High surrogate recovery was observed for decachlorobiphenyl in the BS for batch 248999.

No other analytical problems were encountered.

Chain of Custody

CHAIN OF CUSTODY

Curtis & Tompkins Laboratories
ENVIRONMENTAL ANALYTICAL TESTING LABORATORY
In Business Since 1878

2323 Fifth Street
Berkeley, CA 94710

Phone (510) 486-0900
Fax (510) 486-0532

Page ____ of ____

Chain of Custody # ____

C&T LOGIN # 290013

Project No: 10552253 30.02
Project Name: RFS
Project P. O. No: ON FILE SEE 6/06/17
EDD Format: Report Level ☐ II ☒ III ☐ IV
Turnaround Time: ☒ RUSH 48 HR ☐ Standard

Sampler: BRODERSEN
Report To: BRODERSEN
Company: TETRA TECH
Telephone: 415 497 9060
Email: JASON.BRODERSEN@TETRATECH.COM

Lab No.	Sample ID.	SAMPLING		MATRIX				# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST		
		Date Collected	Time Collected	Water	Solid				HCl	H_2SO_4	HNO_3	NaOH	None	PCB SOXHLET EXT. #3540C	PCB 8082	
*	20170621-RFS-BIBS-SI2	6/21/17	15:10		X			1					X	X	X	
*	20170621-RFS-BIBSwipeE	6/21/17	13:12		X			1					X	X	X	
*	20170621-RFS-BIBSwipeN	6/21/17	13:15		X			1					X	X	X	

*48 HR TAT

Notes:
Wipe samples on gauss are 100 cm² wipe samples
Soxhlet extraction on all.

SAMPLE RECEIPT
☐ Intact
☐ Cold
☐ On Ice
☒ Ambient

RELINQUISHED BY:
DATE: 6/21 TIME: 14:11
DATE: TIME:
DATE: TIME:

RECEIVED BY:
DATE: 6/21/17 TIME: 1411
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST Curtis & Tompkins, Ltd.

Login # 290013 Date Received 6/21/17 Number of coolers 1
Client Tetra Tech Project RFS

Date Opened 6/21/17 By (print) VO (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labelled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
   Shipping info
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many Name Date
2B. Were custody seals intact upon arrival? YES NO (N/A)
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☐ Wet ☐ Blue/Gel (☒ None) Temp(°C)

☐ Temperature blank(s) included? ☐ Thermometer# ☐ IR Gun#

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? (NO)
   If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? YES NO
13. Do the sample labels agree with custody papers? YES NO
14. Was sufficient amount of sample sent for tests requested? YES NO
15. Are the samples appropriately preserved? YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? YES NO N/A
17. Did you document your preservative check? (pH strip lot#) YES NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A
19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A
20. Are bubbles > 6mm absent in VOA samples? YES NO N/A
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS

Rev 13, 6/01/16

Results & QC Summary

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170621-RFS-B185-SI2	Batch#:	248999
Lab ID:	290013-001	Sampled:	06/21/17
Matrix:	Soil	Received:	06/21/17
Units:	ug/Kg	Prepared:	06/21/17
Basis:	dry	Analyzed:	06/23/17
Diln Fac:	1.000		

Moisture: 2%

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.3
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.0
Aroclor-1254	200	9.6	2.4
Aroclor-1260	ND	9.6	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	143	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC890471	Batch#:	248999
Matrix:	Soil	Prepared:	06/21/17
Units:	ug/Kg	Analyzed:	06/23/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	9.6	2.4
Aroclor-1221	ND	19	6.4
Aroclor-1232	ND	9.6	3.1
Aroclor-1242	ND	9.6	2.9
Aroclor-1248	ND	9.6	3.0
Aroclor-1254	ND	9.6	2.4
Aroclor-1260	ND	9.6	1.5

Surrogate	%REC	Limits
Decachlorobiphenyl	86	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Matrix:	Soil	Batch#:	248999
Units:	ug/Kg	Prepared:	06/21/17
Diln Fac:	1.000	Analyzed:	06/23/17

Type: BS Lab ID: QC890472

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	166.7	139.6	84	61-152
Aroclor-1260	166.7	178.0 b	107	62-158

Surrogate	%REC	Limits
Decachlorobiphenyl	167 *	38-158

Type: BSD Lab ID: QC890473

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	166.7	159.1 b	95	61-152	13	44
Aroclor-1260	166.7	149.1	89	62-158	18	32

Surrogate	%REC	Limits
Decachlorobiphenyl	85	38-158

*= Value outside of QC limits; see narrative
b= See narrative
RPD= Relative Percent Difference

Confirmation Report for 290013 PCBS Soil
Curtis & Tompkins Laboratories

Units: ug/Kg

Lab ID	Client ID	Analyte	Result	Confirmation	RPD	%D
290013-001	20170621-RFS-B185-SI2	Aroclor-1254	203.0	181.5	11	-11

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2323 Fifth Street, Berkeley, CA 94710, Phone (510) 486-0900

Laboratory Job Number 290013
ANALYTICAL REPORT
PCBs
Matrix: Wipe

Tetra Tech EMI	Project : 103S225330.02
1999 Harrison Street	Location : RFS Corporation Yard PCB Sampling
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
20170621-RFS-B185 WIPE E	290013-002
20170621-RFS-B185 WIPE N	290013-003

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/26/2017

Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com
(510) 204-2225 Ext 13101

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
PCBS (EPA 8082)
WIPE

Laboratory number:	**290013**
Client:	**Tetra Tech EMI**
Project:	**103S225330.02**
Location:	**RFS Corporation Yard PCB Sampling**
Request Date:	**06/21/17**
Samples Received:	**06/21/17**

This data package contains sample and QC results for two wipe samples, requested for the above referenced project on 06/21/17. See attached cooler receipt form for any sample receipt problems or discrepancies.

PCBs (EPA 8082) Wipe:

All samples underwent sulfuric acid cleanup using EPA Method 3665A.

All samples underwent sulfur cleanup using the copper option in EPA Method 3660B.

No analytical problems were encountered.

Chain of Custody

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Chain of Custody # ____

C&T LOGIN # 290013

Project No: 10552253 30.02
Project Name: RFS
Project P. O. No: ON FILE SEE 6/06/17
EDD Format: Report Level ☐ II ☒ III ☐ IV
Turnaround Time: ☒ RUSH 48 HR ☐ Standard

Sampler: BRODERSEN
Report To: BRODERSEN
Company: TETRA TECH
Telephone: 415 497 9060
Email: JASON.BRODERSEN@TETRATECH.COM

Lab No.	Sample ID.	SAMPLING		MATRIX				# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST		
		Date Collected	Time Collected	Water	Solid				HCl	H2SO4	HNO3	NaOH	None	PCB SOXHLET EXT. #3540C	PCB 8082	
*	20170621-RFS-BIBS-SIZ	6/21/17	15:10		X			1					X	X	X	
*	20170621-RFS-BIBSwipeE	6/21/17	13:12		X			1					X	X	X	
*	20170621-RFS-BIBSwipeN	6/21/17	13:15		X			1					X	X	X	

*48 HR TAT

Notes:
Wipe samples on gauss are 100 cm² wipe samples
Soxhlet extraction on all.

SAMPLE RECEIPT
☐ Intact
☐ Cold
☐ On Ice
☒ Ambient

RELINQUISHED BY:
DATE: 6/21 TIME: 14:11
DATE: TIME:
DATE: TIME:

RECEIVED BY:
DATE: 6/21/17 TIME: 1411
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST Curtis & Tompkins, Ltd.

Login # 290013 Date Received 6/21/17 Number of coolers 1
Client Tetra Tech Project RFS

Date Opened 6/21/17 By (print) VO (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labelled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
   Shipping info
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many Name Date
2B. Were custody seals intact upon arrival? YES NO (N/A)
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

   ☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
   ☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

   Type of ice used: ☐ Wet ☐ Blue/Gel (☒ None) Temp(°C)

   ☐ Temperature blank(s) included? ☐ Thermometer# ☐ IR Gun#

   ☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
   If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? YES (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? YES NO
13. Do the sample labels agree with custody papers? YES NO
14. Was sufficient amount of sample sent for tests requested? YES NO
15. Are the samples appropriately preserved? YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? YES NO N/A
17. Did you document your preservative check? (pH strip lot#) YES NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A
19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A
20. Are bubbles > 6mm absent in VOA samples? YES NO N/A
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS

Rev 13, 6/01/16

Results & QC Summary

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170621-RFS-B185 WIPE E	Batch#:	249000
Lab ID:	290013-002	Sampled:	06/21/17
Matrix:	Wipe	Received:	06/21/17
Units:	ug/s	Prepared:	06/21/17
Diln Fac:	1.000	Analyzed:	06/22/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.25	0.035
Aroclor-1221	ND	0.50	0.096
Aroclor-1232	ND	0.25	0.047
Aroclor-1242	ND	0.25	0.043
Aroclor-1248	ND	0.25	0.046
Aroclor-1254	ND	0.25	0.037
Aroclor-1260	ND	0.25	0.023

Surrogate	%REC	Limits
TCMX	81	51-145
Decachlorobiphenyl	85	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Field ID:	20170621-RFS-B185 WIPE N	Batch#:	249000
Lab ID:	290013-003	Sampled:	06/21/17
Matrix:	Wipe	Received:	06/21/17
Units:	ug/s	Prepared:	06/21/17
Diln Fac:	1.000	Analyzed:	06/22/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.25	0.035
Aroclor-1221	ND	0.50	0.096
Aroclor-1232	ND	0.25	0.047
Aroclor-1242	ND	0.25	0.043
Aroclor-1248	ND	0.25	0.046
Aroclor-1254	ND	0.25	0.037
Aroclor-1260	ND	0.25	0.023

Surrogate	%REC	Limits
TCMX	70	51-145
Decachlorobiphenyl	72	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Type:	BLANK	Diln Fac:	1.000
Lab ID:	QC890474	Batch#:	249000
Matrix:	Wipe	Prepared:	06/21/17
Units:	ug/s	Analyzed:	06/22/17

Analyte	Result	RL	MDL
Aroclor-1016	ND	0.25	0.035
Aroclor-1221	ND	0.50	0.096
Aroclor-1232	ND	0.25	0.047
Aroclor-1242	ND	0.25	0.043
Aroclor-1248	ND	0.25	0.046
Aroclor-1254	ND	0.25	0.037
Aroclor-1260	ND	0.25	0.023

Surrogate	%REC	Limits
TCMX	70	51-145
Decachlorobiphenyl	66	38-158

ND= Not Detected at or above MDL
RL= Reporting Limit
MDL= Method Detection Limit

Curtis & Tompkins, Ltd.

Batch QC Report

Polychlorinated Biphenyls (PCBs)

Lab #:	290013	Location:	RFS Corporation Yard PCB Sampling
Client:	Tetra Tech EMI	Prep:	EPA 3540C
Project#:	103S225330.02	Analysis:	EPA 8082
Matrix:	Wipe	Batch#:	249000
Units:	ug/s	Prepared:	06/21/17
Diln Fac:	1.000	Analyzed:	06/22/17

Type: BS Lab ID: QC890475

Analyte	Spiked	Result	%REC	Limits
Aroclor-1016	2.500	2.112	84	61-152
Aroclor-1260	2.500	1.881	75	62-158

Surrogate	%REC	Limits
TCMX	86	51-145
Decachlorobiphenyl	84	38-158

Type: BSD Lab ID: QC890476

Analyte	Spiked	Result	%REC	Limits	RPD	Lim
Aroclor-1016	2.500	2.003	80	61-152	5	44
Aroclor-1260	2.500	1.626	65	62-158	15	32

Surrogate	%REC	Limits
TCMX	78	51-145
Decachlorobiphenyl	70	38-158

RPD= Relative Percent Difference

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Laboratory Job Number 290013
ANALYTICAL REPORT
Wet Chemistry

Tetra Tech EMI	Project : 103S225330.02
1999 Harrison Street	Location : RFS Corporation Yard PCB Sampling
Oakland, CA 94612	Level : IV

Sample ID	Lab ID
20170621-RFS-B185-SI2	290013-001

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature. The results contained in this report meet all requirements of NELAC and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

Signature: _____ Date: 06/26/2017

Mike Dahlquist
Project Manager
mike.dahlquist@ctberk.com
(510) 204-2225 Ext 13101

CA ELAP# 2896, NELAP# 4044-001

Curtis & Tompkins, Ltd.

CASE NARRATIVE
WET CHEMISTRY (ASTM D2216-98/CLP)

Laboratory number:	**290013**
Client:	**Tetra Tech EMI**
Project:	**103S225330.02**
Location:	**RFS Corporation Yard PCB Sampling**
Request Date:	**06/21/17**
Samples Received:	**06/21/17**

This data package contains sample and QC results for one soil sample, requested for the above referenced project on 06/21/17. See attached cooler receipt form for any sample receipt problems or discrepancies.

Moisture (ASTM D2216-98/CLP):
No analytical problems were encountered.

Chain of Custody

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Chain of Custody # ____

C&T LOGIN # 290013

Project No: 10552253 30.02
Project Name: RFS
Project P. O. No: ON FILE SEE 6/06/17
EDD Format: Report Level ☐ II ☒ III ☐ IV
Turnaround Time: ☒ RUSH 48 HR ☐ Standard

Sampler: BRODERSEN
Report To: BRODERSEN
Company: TETRA TECH
Telephone: 415 497 9060
Email: JASON.BRODERSEN@TETRATECH.COM

Lab No.	Sample ID.	SAMPLING		MATRIX				# of Containers	CHEMICAL PRESERVATIVE					ANALYTICAL REQUEST		
		Date Collected	Time Collected	Water	Solid				HCl	H2SO4	HNO3	NaOH	None	PCB SOXHLET EXT. #3540C	PCB 8082	
*	20170621-RFS-BIBS-SI2	6/21/17	15:10		X			1					X	X	X	
*	20170621-RFS-BIBSwipeE	6/21/17	13:12		X			1					X	X	X	
*	20170621-RFS-BIBSwipeN	6/21/17	13:15		X			1					X	X	X	

*48 HR TAT

Notes:
Wipe samples on gauss are 100 cm² wipe samples
Soxhlet extraction on all.

SAMPLE RECEIPT
☐ Intact
☐ Cold
☐ On Ice
☒ Ambient

RELINQUISHED BY:
DATE: 6/21 TIME: 14:11
DATE: TIME:
DATE: TIME:

RECEIVED BY:
DATE: 6/21/17 TIME: 1411
DATE: TIME:
DATE: TIME:

COOLER RECEIPT CHECKLIST Curtis & Tompkins, Ltd.

Login # 290013 Date Received 6/21/17 Number of coolers 1
Client Tetra Tech Project RFS

Date Opened 6/21/17 By (print) VO (sign)
Date Logged in ↓ By (print) ↓ (sign) ↓
Date Labelled ↓ By (print) ↓ (sign) ↓

1. Did cooler come with a shipping slip (airbill, etc) YES (NO)
   Shipping info
2A. Were custody seals present? .... ☐ YES (circle) on cooler on samples ☒ NO
   How many Name Date
2B. Were custody seals intact upon arrival? YES NO (N/A)
3. Were custody papers dry and intact when received? (YES) NO
4. Were custody papers filled out properly (ink, signed, etc)? (YES) NO
5. Is the project identifiable from custody papers? (If so fill out top of form) (YES) NO
6. Indicate the packing in cooler: (if other, describe)

☐ Bubble Wrap ☐ Foam blocks ☒ Bags ☐ None
☐ Cloth material ☐ Cardboard ☐ Styrofoam ☐ Paper towels

7. Temperature documentation: * Notify PM if temperature exceeds 6°C

Type of ice used: ☐ Wet ☐ Blue/Gel (☒ None) Temp(°C)

☐ Temperature blank(s) included? ☐ Thermometer# ☐ IR Gun#

☐ Samples received on ice directly from the field. Cooling process had begun

8. Were Method 5035 sampling containers present? YES (NO)
   If YES, what time were they transferred to freezer?
9. Did all bottles arrive unbroken/unopened? (YES) NO
10. Are there any missing / extra samples? YES (NO)
11. Are samples in the appropriate containers for indicated tests? (YES) NO
12. Are sample labels present, in good condition and complete? YES NO
13. Do the sample labels agree with custody papers? YES NO
14. Was sufficient amount of sample sent for tests requested? (YES) NO
15. Are the samples appropriately preserved? YES NO (N/A)
16. Did you check preservatives for all bottles for each sample? YES NO N/A
17. Did you document your preservative check? (pH strip lot#) YES NO N/A
18. Did you change the hold time in LIMS for unpreserved VOAs? YES NO N/A
19. Did you change the hold time in LIMS for preserved terracores? YES NO N/A
20. Are bubbles > 6mm absent in VOA samples? YES NO N/A
21. Was the client contacted concerning this sample delivery? YES (NO)
   If YES, Who was called? By Date:

COMMENTS

Rev 13, 6/01/16

Results & QC Summary

Percent Moisture Summary Report

Batch: 249006
Date: 06/22/17
Method: CLP SOW 390
Analyst: MFV

Sample	Tare (g)	Wet (g)	Dry (g)	Percent Solids	Percent Moisture
289970-001	10.94	17.04	16.72	95	5
290013-001	10.89	16.43	16.34	98	2
290016-001	11.26	17.91	17.05	87	13
QC890500	11.29	16.70	16.62	99	1
of 290013-001			RPD:	0.1%	9.4%