



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6

## SVOC DATA PACKAGE

### Client Project Information

Project ID: 1466-004 SEATTLE IRON & METALS  
Project Description:  
Contact: Amber Bailey

### ALSE Project Information

Project ID: FAR100  
Contact: Breanne Dusureault  
Submission ID(s): L2479138

Final Package Review by:

A handwritten signature in black ink, appearing to read "Breanne Dusureault", is written over a horizontal line.

Date Revision Reviewed:

8-Jan-21

## SVOC DATA PACKAGE

### SECTION 1: PROJECT NARRATIVE

**ALSE Project Information**

 Project ID: FAR100  
 Contact: Claire Kocharakkal  
 Submission ID(s): L2479138

**Client Project Information**

 Project ID: 1466-004 SEATTLE IRON & METALS  
 Project Description:  
 Contact: Amber Bailey

**Analytical Method:** PCB Congeners by EPA 1668C

ALS Sample ID	Client Sample Descriptions	Matrix	Date Sampled	Date Received	Temp/degrees C. on receipt	Date Extracted	Date Analyzed
L2468702-1	L2453819-8-062920-1	PUF	29-Jun-20	2-Jul-20	25.0	n/a	n/a
L2472373-1	L2453819-16-070720-1	PUF	7-Jul-20	9-Jul-20	23.5	n/a	n/a
L2475162-1	L2453819-1-071420-1	PUF	14-Jul-20	16-Jul-20	4.9	n/a	n/a
L2479135-1	L2453819-6-072120-1	PUF	21-Jul-20	23-Jul-20	6.5	n/a	n/a
<b>L2479138-1</b>	<b>SITE 1 - COMPOSITE 1 (JULY)</b>	<b>PUF</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
L2468702-2	L2453819-23-062920-2	PUF	29-Jun-20	02-Jul-20	25.0	n/a	n/a
L2472373-2	L2453819-24-070720-2	PUF	7-Jul-20	9-Jul-20	23.5	n/a	n/a
L2475162-2	L2453819-14-071420-2	PUF	14-Jul-20	16-Jul-20	4.9	n/a	n/a
L2479135-2	L2453819-7-072120-2	PUF	21-Jul-20	23-Jul-20	6.5	n/a	n/a
<b>L2479138-2</b>	<b>SITE 2 - COMPOSITE 1 (JULY)</b>	<b>PUF</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
L2468702-3	L2453819-10-062920-3	PUF	29-Jun-20	02-Jul-20	25.0	n/a	n/a
L2472373-3	L2453819-11-070720-3	PUF	7-Jul-20	9-Jul-20	23.5	n/a	n/a
L2475162-3	L2453819-4-071420-3	PUF	14-Jul-20	16-Jul-20	4.9	n/a	n/a
L2479135-3	L2453819-5-072120-3	PUF	21-Jul-20	23-Jul-20	6.5	n/a	n/a
<b>L2479138-3</b>	<b>SITE 3 - COMPOSITE 1 (JULY)</b>	<b>PUF</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
L2468702-4	L2453819-21-062920-4	PUF	29-Jun-20	02-Jul-20	25.0	n/a	n/a
L2472373-4	L2453819-20-070720-4	PUF	7-Jul-20	9-Jul-20	23.5	n/a	n/a
L2475162-4	L2453819-12-071420-4	PUF	14-Jul-20	16-Jul-20	4.9	n/a	n/a
L2479135-4	L2453819-19-072120-4	PUF	21-Jul-20	23-Jul-20	6.5	n/a	n/a
<b>L2479138-4</b>	<b>SITE 4 - COMPOSITE 1 (JULY)</b>	<b>PUF</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
L2468702-5	L2453819-22-062920-5	PUF	29-Jun-20	02-Jul-20	25.0	n/a	n/a
L2472373-5	L2453819-13-070720-5	PUF	7-Jul-20	9-Jul-20	23.5	n/a	n/a
L2475162-5	L2453819-3-071420-5	PUF	14-Jul-20	16-Jul-20	4.9	n/a	n/a
L2479135-5	L2453819-2-072120-5	PUF	21-Jul-20	23-Jul-20	6.5	n/a	n/a
<b>L2479138-5</b>	<b>SITE 5 - COMPOSITE 1 (JULY)</b>	<b>PUF</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
<b>WG3369876-1</b>	<b>Method Blank</b>	<b>MEDIA</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
<b>WG3369876-4</b>	<b>Method Blank</b>	<b>REAGENT</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>
<b>WG3369876-2</b>	<b>Laboratory Control Sample</b>	<b>QC</b>	<b>n/a</b>	<b>n/a</b>	<b>n/a</b>	<b>30-Jul-20</b>	<b>11-Aug-20</b>

**\*\*\* REVISED REPORT \*\*\***

This report data package supersedes all prior reports for the above noted workorder and test. The report has been revised as follows:

A few PCB peaks were misassigned in the original package. These have been reassessed and the results re-calculated.

**\*\*\* ORIGINAL COMMENTS \*\*\***
**a) Sample Integrity:**

The samples were received on 4 different dates as noted above. The four samples for each sites were extracted together for a total of 5 composites. Some of the samples were received at above the recommended transportation and storage temperature. However, the brief period at above the recommended temperature is not expected to have a negative impact on reported native target results.

**b) Instrumental Analysis:**

The responses of PCB-1 and PCB-3 Have been omitted from the highest level of the initial calibration due to detector saturation. Four calibration levels have been used for these targets.

For the samples SITE 2 - COMPOSITE 1 (JULY) and SITE 5 - COMPOSITE 1 (JULY), the ion abundance ratios for PCB-8 were not within the method control limit. However, given the expected pattern they have been treated as genuine PCBs (EPA 1668C Section 16.5).

I certify that this data package is in compliance with the terms and condition of the contract , both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this data package (hardcopy and/or electronic version) has been authorized by the Laboratory Manager or his designee, as verified by the following signature.



Steve Kennedy, Technical Supervisor

 8-Jan-21  
 Revision Date

# **SVOC DATA PACKAGE**

## **SECTION 2: DATA SUMMARY REPORT**



1435 Norjohn Court, Unit 1, Burlington, ON, Canada L7L 0E6  
Phone: 905-331-3111, FAX: 905-331-4567

### Certificate of Analysis

<b>ALS Project Contact:</b> Claire Kocharakkal	<b>Client Name:</b> Farallon Consulting, L.L.C.
<b>ALS Project ID:</b> FAR100	<b>Client Address:</b> 975 5th Avenue Northwest
<b>ALS WO#:</b> L2479138	Issaquah, WA
<b>Date of Report Revision:</b> 8-Jan-21	98027
<b>Date of Sample Receipt:</b> 23-Jul-20	<b>Client Contact:</b> Amber Bailey
	<b>Client Project ID:</b> 1466-004 SEATTLE IRON & METALS

**COMMENTS:** PCB Congeners by EPA 1668C

PCB Congener Group Totals and Total PCB are a sum of detected values, including EMPC values, consistent with USEPA CLP SOW CBC1.2

**\*\*\* REVISED REPORT \*\*\***

This report data package supersedes all prior reports for the above noted workorder and test. The report has been revised as follows:

A few PCB peaks were misassigned in the original package. These have been reassessed and the results re-calculated.

Certified by:   
Steve Kennedy  
Technical Supervisor

Results in this certificate relate only to the samples as submitted to the laboratory.  
This report shall not be reproduced, except in full, without the written permission of ALS Canada Ltd.

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## Sample Analysis Summary Report

Sample Name	SITE 1 - COMPOSITE 1 (JULY)	SITE 2 - COMPOSITE 1 (JULY)	SITE 3 - COMPOSITE 1 (JULY)	SITE 4 - COMPOSITE 1 (JULY)	SITE 5 - COMPOSITE 1 (JULY)
ALS Sample ID	L2479138-1	L2479138-2	L2479138-3	L2479138-4	L2479138-5
Sample Size	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a
Sample Matrix	PUF	PUF	PUF	PUF	PUF
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>
PCB-001	12900	229000	67200	109000	213000
PCB-002	998	10500	3840	6290	11800
PCB-003	3140	41500	13400	23400	43100
PCB-004	87700	1040000	372000	797000	1060000
PCB-010	2700	34000	12100	24600	37700
PCB-009	7150	81300	30400	62600	95600
PCB-007	4180	46200	17500	35400	53400
PCB-006	20500	201000	81300	167000	218000
PCB-005	<1700	19200	6980	13000	18500
PCB-008	87800	704000	327000	710000	775000
PCB-014	<9.2	<64	38.8	<56	<85
PCB-011	11300	8380	8610	14700	15100
PCB-012/013	4060	29700	15300	30500	38800
PCB-015	16900	129000	53900	137000	169000
PCB-019	15900	143000	54400	135000	161000
PCB-018/030	77000	676000	290000	670000	823000
PCB-017	34800	304000	129000	304000	389000
PCB-027	4890	38500	17300	38900	50100
PCB-024	1140	10900	4220	9690	13600
PCB-016	32100	266000	115000	273000	340000
PCB-032	18300	144000	62900	149000	184000
PCB-034	219	1850	814	2030	2690
PCB-023	103	899	385	908	1290
PCB-026/029	11300	85000	38900	95300	120000
PCB-025	4550	33900	15300	38000	47500
PCB-031	51000	369000	165000	429000	524000
PCB-020/028	54800	387000	176000	454000	546000
PCB-021/033	33900	241000	108000	279000	336000
PCB-022	19300	130000	57400	153000	181000
PCB-036	<24	<26	<18	<24	<25
PCB-039	121	727	369	1020	1080
PCB-038	<22	120	55.2	167	186
PCB-035	694	3000	2170	4640	4840
PCB-037	6170	33600	17100	48200	54000
PCB-054	216	1620	701	1750	2020
PCB-050/053	6730	46600	21200	53200	61800
PCB-045/051	9280	60000	28000	71200	79700
PCB-046	2730	17000	7920	20500	22900
PCB-052	31000	159000	82700	227000	231000
PCB-073	<4.2	<4.6	<5.3	<7.4	<4.5
PCB-043	1650	9020	4720	12300	12300
PCB-049/069	18000	93800	48600	133000	134000
PCB-048	8640	45900	24000	64600	66000
PCB-044/047/065	27500	135000	69800	192000	191000
PCB-059/062/075	2850	13800	7230	19900	20000
PCB-042	7770	37200	19200	53200	52100
PCB-040/041/071	15600	73800	38200	107000	104000
PCB-064	10800	50200	26400	74800	73200
PCB-072	<71	380	235	645	666
PCB-068	52.4	168	<100	307	296
PCB-057	81.2	450	251	717	728
PCB-058	23.2	114	53.6	184	202
PCB-067	457	2360	1370	4030	4050
PCB-063	416	2220	1250	3780	3780
PCB-061/070/074/076	16000	76600	45000	135000	131000
PCB-066	6680	33600	19600	59800	56900
PCB-055	251	1270	731	2190	1920
PCB-056	2990	15100	9030	27600	26000
PCB-060	1800	9720	5730	17200	16900
PCB-080	<8.9	<6.9	<7.3	<13	<8.5
PCB-079	37.6	126	101	230	<190
PCB-078	<13	<13	<15	38.7	<36
PCB-081	18.7	94.5	56.3	187	185
PCB-077	424	1550	1030	3130	3150
PCB-104	<2.7	12.8	7.17	20.8	21.2
PCB-096	202	986	500	1320	1410
PCB-103	80.8	286	183	514	489
PCB-094	84.5	<330	212	587	536
PCB-095	8350	27700	17000	48600	43800
PCB-093/098/100/102	597	2380	1380	3960	3650

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## Sample Analysis Summary Report

Sample Name	SITE 1 - COMPOSITE 1 (JULY)	SITE 2 - COMPOSITE 1 (JULY)	SITE 3 - COMPOSITE 1 (JULY)	SITE 4 - COMPOSITE 1 (JULY)	SITE 5 - COMPOSITE 1 (JULY)
ALS Sample ID	L2479138-1	L2479138-2	L2479138-3	L2479138-4	L2479138-5
Sample Size	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a
Sample Matrix	PUF	PUF	PUF	PUF	PUF
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>
PCB-088/091	1470	5390	3320	9860	8650
PCB-084	2310	8040	4950	14700	13100
PCB-089	133	536	306	942	859
PCB-121	<4.2	<5.4	<6.8	<6.0	<5.5
PCB-092	1260	3770	2660	7540	6650
PCB-090/101/113	6970	20100	14600	39800	35200
PCB-083/099	3610	11400	8120	21800	19500
PCB-112	<4.0	<5.0	<6.4	<5.7	<5.2
PCB-086/087/097/109/119/125	4580	13600	9720	25900	23000
PCB-085/110/115/116/117	7450	21400	15200	40600	35100
PCB-082	627	2230	1450	4090	3560
PCB-111	<4.1	<5.1	<6.5	<5.7	7.26
PCB-120	<6.0	20.9	<19	<46	43.3
PCB-108/124	142	429	265	779	850
PCB-107	221	678	428	1230	1340
PCB-123	51.9	202	108	333	301
PCB-106	<4.5	<6.3	<7.2	<8.4	<7.3
PCB-118	2940	9520	6010	16800	17100
PCB-122	51.6	163	104	291	278
PCB-114	84.0	319	192	552	573
PCB-105	1080	4140	2390	7460	7560
PCB-127	<4.2	<6.0	<6.8	15.6	<10
PCB-126	<29	<40	<46	<76	<82
PCB-155	2.83	<1.6	<3.1	<1.2	5.58
PCB-152	<5.6	18.3	15.0	<30	33.8
PCB-150	<11	21.6	<18	49.6	42.9
PCB-136	661	1420	1070	2880	2680
PCB-145	<1.7	<7.5	<1.7	<14	16.9
PCB-148	<6.4	9.08	9.61	<18	<14
PCB-135/151	1210	2350	1950	4720	4520
PCB-154	47.3	80.9	81.5	181	<140
PCB-144	189	376	301	739	696
PCB-147/149	2740	5630	4290	11100	10700
PCB-134/143	213	483	344	954	903
PCB-139/140	74.2	182	128	369	359
PCB-131	53.9	135	98.9	259	247
PCB-142	<3.0	<5.4	<4.5	<5.2	<5.0
PCB-132	1060	2530	1760	4900	<3.7
PCB-133	40.0	79.3	60.0	158	159
PCB-165	<5.1	<6.9	8.03	<8.8	13.1
PCB-146	323	698	528	1400	1420
PCB-161	<2.2	<3.9	<3.2	<3.7	<2.6
PCB-153/168	1990	4290	3290	8660	8500
PCB-141	435	980	679	1860	1990
PCB-130	141	372	235	743	681
PCB-137/164	250	671	455	1290	1260
PCB-129/138/163	2160	5580	3700	10500	10100
PCB-160	<2.1	<3.8	<3.1	<3.6	<2.5
PCB-158	195	546	359	1060	1020
PCB-128/166	272	845	519	1600	1560
PCB-159	<6.8	17.1	11.9	32.6	<32
PCB-162	<4.6	15.7	<9.2	<29	33.7
PCB-167	<54	203	118	361	347
PCB-156/157	158	626	351	1160	1170
PCB-169	<4.1	<6.2	<7.8	<9.3	<11
PCB-188	6.31	6.00	10.1	<13	<14
PCB-179	253	370	365	645	685
PCB-184	<2.6	<4.2	<4.5	7.77	5.11
PCB-176	64.2	107	89.2	181	188
PCB-186	<1.9	<1.5	<1.8	<2.1	<1.8
PCB-178	84.8	127	133	239	271
PCB-175	16.2	32.6	<23	52.0	57.7
PCB-187	495	801	850	1540	1740
PCB-182	<3.8	<6.7	<2.1	13.0	12.8
PCB-183	192	365	330	645	756
PCB-185	35.9	45.9	38.4	104	95.2
PCB-174	255	521	384	846	904
PCB-177	125	272	193	438	489
PCB-181	3.37	<4.4	<3.8	14.9	15.9
PCB-171/173	65.3	166	102	242	269
PCB-172	<33	86.6	58.8	144	162

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## Sample Analysis Summary Report

Sample Name	SITE 1 - COMPOSITE 1 (JULY)	SITE 2 - COMPOSITE 1 (JULY)	SITE 3 - COMPOSITE 1 (JULY)	SITE 4 - COMPOSITE 1 (JULY)	SITE 5 - COMPOSITE 1 (JULY)
ALS Sample ID	L2479138-1	L2479138-2	L2479138-3	L2479138-4	L2479138-5
Sample Size	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a
Sample Matrix	PUF	PUF	PUF	PUF	PUF
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>
PCB-192	<2.0	<1.7	<1.9	<2.3	<2.0
PCB-180/193	425	1130	761	1810	2160
PCB-191	8.78	<20	12.7	30.8	<33
PCB-170	138	472	239	700	783
PCB-190	32.8	87.7	57.6	142	150
PCB-189	4.43	<17	<10	31.2	<28
PCB-202	125	137	232	360	371
PCB-201	52.8	63.9	96.4	171	157
PCB-204	<1.1	<0.88	<1.4	<1.2	<1.2
PCB-197	11.3	<12	<15	<26	<25
PCB-200	<31	52.6	58.3	103	101
PCB-198/199	<200	393	396	811	883
PCB-196	73.9	150	131	280	329
PCB-203	118	252	257	530	572
PCB-195	34.5	67.9	51.6	136	141
PCB-194	82.8	211	163	409	451
PCB-205	5.21	11.4	<5.2	17.0	18.6
PCB-208	37.8	58.5	<59	147	141
PCB-207	15.8	29.2	32.4	<64	61.1
PCB-206	74.3	<160	134	374	379
PCB-209	<12	52.1	32.6	106	127
<b>Extraction Standards</b>	<b>% Rec</b>	<b>% Rec</b>	<b>% Rec</b>	<b>% Rec</b>	<b>% Rec</b>
13C12-PCB-001	55	68	66	46	68
13C12-PCB-003	61	71	72	52	81
13C12-PCB-004	61	64	72	50	68
13C12-PCB-015	77	79	86	64	79
13C12-PCB-019	54	55	66	45	58
13C12-PCB-037	69	71	76	58	70
13C12-PCB-054	51	59	63	44	62
13C12-PCB-081	68	70	73	51	67
13C12-PCB-077	69	72	74	52	69
13C12-PCB-104	68	73	75	53	69
13C12-PCB-123	68	71	75	52	68
13C12-PCB-118	70	72	76	55	71
13C12-PCB-114	67	69	73	51	67
13C12-PCB-105	64	67	71	49	65
13C12-PCB-126	65	70	73	49	65
13C12-PCB-155	66	71	78	56	47
13C12-PCB-167	94	98	105	76	95
13C12-PCB-156/157	92	97	101	73	86
13C12-PCB-169	98	106	109	78	97
13C12-PCB-188	103	97	118	88	85
13C12-PCB-189	93	92	98	73	90
13C12-PCB-202	78	82	90	66	79
13C12-PCB-205	91	91	104	75	89
13C12-PCB-208	88	95	108	81	79
13C12-PCB-206	100	100	115	81	100
13C12-PCB-209	76	73	84	65	48
<b>Field Spike Standards</b>					
13C12-PCB-031	108	113	110	96	111
13C12-PCB-095	129	120	123	121	115
13C12-PCB-153	109	99	110	106	113
<b>Cleanup Standards</b>					
13C12-PCB-028	60	67	67	55	61
13C12-PCB-111	92	94	98	76	82
13C12-PCB-178	92	92	96	77	81

# ALS Life Sciences

## Sample Analysis Summary Report

Sample Name	SITE 1 - COMPOSITE 1 (JULY)	SITE 2 - COMPOSITE 1 (JULY)	SITE 3 - COMPOSITE 1 (JULY)	SITE 4 - COMPOSITE 1 (JULY)	SITE 5 - COMPOSITE 1 (JULY)
ALS Sample ID	L2479138-1	L2479138-2	L2479138-3	L2479138-4	L2479138-5
Sample Size	1	1	1	1	1
Sample size units	Sample	Sample	Sample	Sample	Sample
Percent Moisture	n/a	n/a	n/a	n/a	n/a
Sample Matrix	PUF	PUF	PUF	PUF	PUF
Sampling Date	n/a	n/a	n/a	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>	<b>pg</b>
<b>Homologue Group Totals</b>					
Total MonoCB	17000	281000	84400	139000	268000
Total DiCB	244000	2290000	925000	1990000	2480000
Total TriCB	366000	2870000	1250000	3080000	3780000
Total TetraCB	172000	887000	463000	1290000	1300000
Total PentaCB	42300	134000	89200	248000	224000
Total HexaCB	12300	28200	20400	55100	48700
Total HeptaCB	2240	4640	3670	7840	8820
Total OctaCB	735	1350	1410	2840	3050
Total NonaCB	128	248	225	585	581
DecaCB	12.0	52.1	32.6	106	127
Total PCB	857000	6500000	2840000	6820000	8110000
<b>Toxic Equivalency - (WHO 2005)</b>					
Lower Bound PCB TEQ	0.178	0.634	0.395	1.17	1.18
Mid Point PCB TEQ	3.20	4.82	5.23	9.05	9.71
Upper Bound PCB TEQ	3.20	4.82	5.23	9.05	9.71



# ALS Life Sciences

## Quality Control Summary Report

Sample Name	Method Blank	Method Blank
ALS Sample ID	WG3369876-1	WG3369876-4
Sample Size	1	1
Sample size units	Blank	Blank
Percent Moisture	n/a	n/a
Sample Matrix	MEDIA	REAGENT
Sampling Date	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>
PCB-001	<2.8	<4.1
PCB-002	<3.3	<3.6
PCB-003	<2.9	<1.9
PCB-004	<37	<21
PCB-010	<18	<12
PCB-009	<18	<12
PCB-007	<18	<12
PCB-006	<18	<12
PCB-005	<20	<13
PCB-008	<16	<11
PCB-014	<8.9	<5.1
PCB-011	93.1	52.9
PCB-012/013	<9.3	<5.3
PCB-015	<8.7	<5.4
PCB-019	<6.9	<3.0
PCB-018/030	10.1	6.74
PCB-017	<4.6	4.35
PCB-027	<3.3	<2.0
PCB-024	<3.6	<2.2
PCB-016	<5.2	<3.1
PCB-032	<3.1	<2.0
PCB-034	<4.0	<3.6
PCB-023	<4.0	<3.6
PCB-026/029	<3.8	<3.4
PCB-025	<3.6	<3.2
PCB-031	<9.7	10.1
PCB-020/028	<12	10.8
PCB-021/033	<5.9	<7.1
PCB-022	<7.2	5.33
PCB-036	<3.8	<3.4
PCB-039	<3.9	<3.4
PCB-038	<4.1	<3.6
PCB-035	<4.1	<3.7
PCB-037	<5.4	<4.1
PCB-054	<3.1	<1.9
PCB-050/053	<3.7	<2.1
PCB-045/051	<3.8	4.73
PCB-046	<4.2	<2.4
PCB-052	<18	<13
PCB-073	<3.0	<1.7
PCB-043	<4.2	<2.4
PCB-049/069	<8.4	<6.3
PCB-048	<3.6	<2.1
PCB-044/047/065	<21	18.5
PCB-059/062/075	<2.8	<1.6
PCB-042	<3.8	<2.2
PCB-040/041/071	<9.9	9.73
PCB-064	<5.6	<5.0
PCB-072	<3.7	<2.5
PCB-068	<3.5	<2.4
PCB-057	<3.8	<2.6
PCB-058	<3.9	<2.6
PCB-067	<3.4	<2.2
PCB-063	<3.6	<2.4
PCB-061/070/074/076	<9.2	<12
PCB-066	5.09	4.91
PCB-055	<4.0	<2.6
PCB-056	<3.9	<2.6
PCB-060	<3.9	<2.6
PCB-080	<3.3	<2.2
PCB-079	<3.3	<2.2
PCB-078	<3.8	<2.6
PCB-081	<3.7	<2.7
PCB-077	<3.6	<2.6
PCB-104	<1.9	<1.5
PCB-096	<1.9	<1.4
PCB-103	<2.8	<1.7
PCB-094	<3.3	<2.1
PCB-095	11.9	12.2
PCB-093/098/100/102	<3.0	<1.9

# ALS Life Sciences

## Quality Control Summary Report

Sample Name	Method Blank	Method Blank
ALS Sample ID	WG3369876-1	WG3369876-4
Sample Size	1	1
Sample size units	Blank	Blank
Percent Moisture	n/a	n/a
Sample Matrix	MEDIA	REAGENT
Sampling Date	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>
PCB-088/091	<3.0	<2.4
PCB-084	<3.3	5.95
PCB-089	<3.2	<2.0
PCB-121	<2.3	<1.4
PCB-092	<3.0	2.48
PCB-090/101/113	15.4	<10
PCB-083/099	<3.1	5.10
PCB-112	<2.1	<1.3
PCB-086/087/097/109/119/125	11.6	<11
PCB-085/110/115/116/117	16.5	16.6
PCB-082	<3.3	<2.0
PCB-111	<2.2	<1.4
PCB-120	<2.1	<1.3
PCB-108/124	<2.1	<1.7
PCB-107	<2.0	<1.6
PCB-123	<2.3	<1.9
PCB-106	<2.1	<1.7
PCB-118	<9.1	7.68
PCB-122	<2.1	<1.7
PCB-114	<2.3	<1.9
PCB-105	4.59	<4.0
PCB-127	<2.0	<1.6
PCB-126	<2.4	<1.9
PCB-155	<1.4	<1.1
PCB-152	<1.5	<1.0
PCB-150	<1.5	<0.97
PCB-136	<1.5	<2.4
PCB-145	<1.6	<1.0
PCB-148	<2.0	<1.3
PCB-135/151	<3.0	4.07
PCB-154	<1.7	<1.1
PCB-144	<2.0	<1.3
PCB-147/149	<9.0	<9.5
PCB-134/143	<2.2	<2.9
PCB-139/140	<1.9	<2.5
PCB-131	<2.2	<2.9
PCB-142	<2.1	<2.8
PCB-132	<2.2	<4.6
PCB-133	<2.0	<2.7
PCB-165	<1.6	<2.2
PCB-146	<1.7	<2.2
PCB-161	<1.5	<2.0
PCB-153/168	5.24	<5.3
PCB-141	<2.2	<2.4
PCB-130	<2.1	<2.8
PCB-137/164	<1.6	<2.1
PCB-129/138/163	<5.4	<8.2
PCB-160	<1.5	<2.0
PCB-158	<1.3	<1.7
PCB-128/166	<1.7	<2.2
PCB-159	<1.4	<1.9
PCB-162	<1.5	<2.0
PCB-167	<1.5	<1.9
PCB-156/157	<2.1	<2.6
PCB-169	<1.8	<2.2
PCB-188	<1.9	<1.4
PCB-179	<1.7	<1.3
PCB-184	<1.7	<1.3
PCB-176	<1.8	<1.3
PCB-186	<1.8	<1.4
PCB-178	<2.3	<1.7
PCB-175	<2.2	<1.7
PCB-187	<2.1	<1.8
PCB-182	<2.1	<1.6
PCB-183	<2.1	<1.6
PCB-185	<2.3	<1.8
PCB-174	<2.1	1.85
PCB-177	<2.3	<1.7
PCB-181	<2.3	<1.8
PCB-171/173	<2.3	<1.8
PCB-172	<2.3	<1.7

# ALS Life Sciences

## Quality Control Summary Report

Sample Name	Method Blank	Method Blank
ALS Sample ID	WG3369876-1	WG3369876-4
Sample Size	1	1
Sample size units	Blank	Blank
Percent Moisture	n/a	n/a
Sample Matrix	MEDIA	REAGENT
Sampling Date	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20

  

Target Analytes	pg	pg
PCB-192	<2.0	<1.5
PCB-180/193	<1.9	<2.0
PCB-191	<1.8	<1.4
PCB-170	<2.4	<1.9
PCB-190	<1.7	<1.3
PCB-189	<1.4	<1.5
PCB-202	<1.6	<0.88
PCB-201	<1.5	<0.78
PCB-204	<1.5	<0.79
PCB-197	<1.5	<0.80
PCB-200	<1.5	<0.80
PCB-198/199	<2.0	<1.1
PCB-196	<2.0	<1.1
PCB-203	<1.9	<1.0
PCB-195	<1.4	<1.0
PCB-194	2.81	<0.98
PCB-205	<1.3	<0.89
PCB-208	<3.0	<2.7
PCB-207	<3.4	<3.0
PCB-206	<4.7	<4.1
PCB-209	<1.5	<1.3

  

Extraction Standards	% Rec	% Rec
13C12-PCB-001	63	92
13C12-PCB-003	67	88
13C12-PCB-004	61	89
13C12-PCB-015	70	82
13C12-PCB-019	49	70
13C12-PCB-037	62	78
13C12-PCB-054	44	76
13C12-PCB-081	67	79
13C12-PCB-077	71	83
13C12-PCB-104	69	84
13C12-PCB-123	73	86
13C12-PCB-118	72	86
13C12-PCB-114	70	83
13C12-PCB-105	70	83
13C12-PCB-126	71	86
13C12-PCB-155	71	71
13C12-PCB-167	102	116
13C12-PCB-156/157	95	110
13C12-PCB-169	97	118
13C12-PCB-188	102	105
13C12-PCB-189	99	108
13C12-PCB-202	80	90
13C12-PCB-205	101	109
13C12-PCB-208	100	103
13C12-PCB-206	108	116
13C12-PCB-209	82	70

  

Field Spike Standards		
13C12-PCB-031	NS	NS
13C12-PCB-095	NS	NS
13C12-PCB-153	NS	NS

  

Cleanup Standards		
13C12-PCB-028	59	67
13C12-PCB-111	94	96
13C12-PCB-178	98	94

# ALS Life Sciences

## Quality Control Summary Report

Sample Name	Method Blank	Method Blank
ALS Sample ID	WG3369876-1	WG3369876-4
Sample Size	1	1
Sample size units	Blank	Blank
Percent Moisture	n/a	n/a
Sample Matrix	MEDIA	REAGENT
Sampling Date	n/a	n/a
Extraction Date	30-Jul-20	30-Jul-20
<b>Target Analytes</b>	<b>pg</b>	<b>pg</b>
<b>Homologue Group Totals</b>		
Total MonoCB	<2.8	3.60
Total DiCB	93.1	52.9
Total TriCB	54.9	50.5
Total TetraCB	77.2	74.2
Total PentaCB	69.1	77.4
Total HexaCB	24.8	34.1
Total HeptaCB	<1.4	7.55
Total OctaCB	2.81	<0.78
Total NonaCB	<3.0	<2.7
DecaCB	<1.5	<1.3
Total PCB	322	300
<b>Toxic Equivalency - (WHO 2005)</b>		
Lower Bound PCB TEQ	0.000138	0.000230
Mid Point PCB TEQ	0.148	0.129
Upper Bound PCB TEQ	0.296	0.258

# ALS Life Sciences

## Sample Analysis Summary Report

Sample Name	Laboratory Control Sample
ALS Sample ID	WG3369876-2
Sample Size	1
Sample size units	n/a
Percent Moisture	n/a
Sample Matrix	QC
Sampling Date	n/a
Extraction Date	30-Jul-20
<b>Target Analytes</b>	
	<b>% Rec</b>
PCB-001	90
PCB-003	91
PCB-004	126
PCB-015	99
PCB-019	118
PCB-037	99
PCB-054	123
PCB-081	96
PCB-077	94
PCB-104	108
PCB-123	100
PCB-118	101
PCB-114	108
PCB-105	104
PCB-126	99
PCB-155	113
PCB-167	101
PCB-156/157	104
PCB-169	107
PCB-188	110
PCB-189	94
PCB-202	115
PCB-205	97
PCB-208	94
PCB-206	90
PCB-209	109
<b>Extraction Standards</b>	
	<b>% Rec</b>
13C12-PCB-001	68
13C12-PCB-003	68
13C12-PCB-004	64
13C12-PCB-015	66
13C12-PCB-019	52
13C12-PCB-037	61
13C12-PCB-054	57
13C12-PCB-081	59
13C12-PCB-077	61
13C12-PCB-104	64
13C12-PCB-123	62
13C12-PCB-118	62
13C12-PCB-114	60
13C12-PCB-105	58
13C12-PCB-126	60
13C12-PCB-155	67
13C12-PCB-167	85
13C12-PCB-156/157	83
13C12-PCB-169	94
13C12-PCB-188	89
13C12-PCB-189	88
13C12-PCB-202	76
13C12-PCB-205	82
13C12-PCB-208	84
13C12-PCB-206	92
13C12-PCB-209	66
<b>Field Spike Standards</b>	
13C12-PCB-031	NS
13C12-PCB-095	NS
13C12-PCB-153	NS
<b>Cleanup Standards</b>	
13C12-PCB-028	61
13C12-PCB-111	85
13C12-PCB-178	85

# ALS Life Sciences

## Sample Analysis Summary Report

Sample Name	CCV	CCV
ALS Sample ID	H5-20-CCV-637	H5-20-CCV-640
Sample Size	1	1
Sample size units	n/a	n/a
Percent Moisture	n/a	n/a
Sample Matrix	QC	QC
Sampling Date	n/a	n/a
Extraction Date	n/a	n/a
<b>Target Analytes</b>		
	<b>% Rec</b>	<b>% Rec</b>
PCB-001	86	84
PCB-003	87	85
PCB-004	114	113
PCB-015	96	97
PCB-019	114	115
PCB-037	94	94
PCB-054	119	115
PCB-081	94	98
PCB-077	93	94
PCB-104	115	114
PCB-123	101	99
PCB-118	99	99
PCB-114	104	101
PCB-105	106	104
PCB-126	102	99
PCB-155	119	115
PCB-167	106	105
PCB-156/157	108	106
PCB-169	110	107
PCB-188	112	112
PCB-189	93	93
PCB-202	112	112
PCB-205	103	102
PCB-208	99	97
PCB-206	97	96
PCB-209	99	100
<b>Extraction Standards</b>		
	<b>% Rec</b>	<b>% Rec</b>
13C12-PCB-001	114	109
13C12-PCB-003	112	104
13C12-PCB-004	105	103
13C12-PCB-015	99	91
13C12-PCB-019	74	79
13C12-PCB-037	89	84
13C12-PCB-054	78	85
13C12-PCB-081	77	85
13C12-PCB-077	79	89
13C12-PCB-104	76	84
13C12-PCB-123	75	83
13C12-PCB-118	76	82
13C12-PCB-114	73	79
13C12-PCB-105	71	76
13C12-PCB-126	75	79
13C12-PCB-155	78	86
13C12-PCB-167	102	103
13C12-PCB-156/157	100	102
13C12-PCB-169	103	105
13C12-PCB-188	104	108
13C12-PCB-189	98	95
13C12-PCB-202	81	88
13C12-PCB-205	101	103
13C12-PCB-208	102	106
13C12-PCB-206	107	112
13C12-PCB-209	93	93
<b>Field Spike Standards</b>		
	<b>% Rec</b>	<b>% Rec</b>
13C12-PCB-031	108	106
13C12-PCB-095	126	120
13C12-PCB-153	107	105
<b>Cleanup Standards</b>		
	<b>% Rec</b>	<b>% Rec</b>
13C12-PCB-028	92	91
13C12-PCB-111	102	112
13C12-PCB-178	102	107

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 1 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-1  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B06  
 Run Date 11-Aug-20 14:03  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-001		8.87	12900	3.7			50
PCB-002		10.28	998	4.3			50
PCB-003		10.41	3140	3.6			50
PCB-004		10.58	87700	35			50
PCB-010		10.69	2700	15			50
PCB-009		11.84	7150	15			50
PCB-007		11.95	4180	15			50
PCB-006		12.11	20500	15			50
PCB-005		12.30	<1700	17	M,R	1700	50
PCB-008		12.37	87800	14	M		50
PCB-014		NotFnd	<9.2	9.2	U		50
PCB-011		13.87	11300	9.7	M		50
PCB-012/013		14.06	4060	9.5			50
PCB-015		14.26	16900	8.3			50
PCB-019		12.57	15900	5.2			50
PCB-018/030		13.69	77000	5.1			50
PCB-017		13.94	34800	6.1			50
PCB-027		14.07	4890	4.4			50
PCB-024		14.15	1140	4.8			50
PCB-016		14.22	32100	7.0			50
PCB-032		14.52	18300	4.1			50
PCB-034		15.22	219	14			50
PCB-023		15.31	103	14			50
PCB-026/029		15.48	11300	13			50
PCB-025		15.63	4550	12			50
PCB-031		15.80	51000	12			50
PCB-020/028		15.97	54800	13			50
PCB-021/033		16.11	33900	13			50
PCB-022		16.34	19300	14			50
PCB-036		17.18	<24	13	J,R	24	50
PCB-039		17.41	121	13			50
PCB-038		17.72	<22	14	J,R	22	50
PCB-035		17.98	694	14	M		50
PCB-037		18.21	6170	12			50
PCB-054		14.43	216	2.5			50
PCB-050/053		15.64	6730	5.1			50
PCB-045/051		16.04	9280	5.3			50
PCB-046		16.22	2730	5.8			50
PCB-052		16.97	31000	4.9			50
PCB-073		NotFnd	<4.2	4.2	U		50
PCB-043		17.11	1650	5.9			50
PCB-049/069		17.24	18000	4.5			50
PCB-048		17.41	8640	5.1			50
PCB-044/047/065		17.53	27500	4.7			50
PCB-059/062/075		17.71	2850	3.9			50
PCB-042		17.83	7770	5.3			50
PCB-040/041/071		18.09	15600	5.0			50
PCB-064		18.22	10800	3.8			50
PCB-072		18.63	<71	9.9	R	71	50
PCB-068		18.79	52.4	9.5			50
PCB-057		19.03	81.2	10			50
PCB-058		19.15	23.2	10	M,J		50
PCB-067		19.25	457	9.0			50
PCB-063		19.40	416	9.8			50
PCB-061/070/074/076		19.58	16000	10			50
PCB-066		19.75	6680	9.5			50
PCB-055		19.86	251	11			50
PCB-056		20.13	2990	11			50
PCB-060		20.25	1800	10			50
PCB-080		NotFnd	<8.9	8.9	U		50
PCB-079		21.25	37.6	9.0	J		50
PCB-078		21.61	<13	10	M,J,R	13	50
PCB-081	0.0003	21.80	18.7	10	J		50
PCB-077	0.0001	22.10	424	10			50
PCB-104		17.50	<2.7	1.7	J,R	2.7	50
PCB-096		17.73	202	1.6			50
PCB-103		18.74	80.8	5.2			50
PCB-094		18.87	84.5	6.2			50
PCB-095		19.12	8350	5.5			50
PCB-093/098/100/102		19.30	597	5.6	M		50

ALS Life Sciences

Sample Analysis Report

**Sample Name** SITE 1 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-1  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
 E. Sabljic  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B06  
 Run Date 11-Aug-20 14:03  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-088/091		19.58	1470	5.7			50
PCB-084		19.72	2310	6.2			50
PCB-089		19.97	133	5.9			50
PCB-121		NotFnd	<4.2	4.2	U		50
PCB-092		20.34	1260	5.7			50
PCB-090/101/113		20.65	6970	4.9			50
PCB-083/099		20.97	3610	5.7			50
PCB-112		NotFnd	<4.0	4.0	U		50
PCB-086/087/097/109/119/125		21.30	4580	4.8	M		50
PCB-085/110/115/116/117		21.71	7450	4.4	M		50
PCB-082		21.91	627	6.1			50
PCB-111		NotFnd	<4.1	4.1	U		50
PCB-120		22.30	<6.0	3.9	J,R	6.0	50
PCB-108/124		22.91	142	4.6			50
PCB-107		23.04	221	4.3	M		50
PCB-123	0.00003	23.10	51.9	5.1	M		50
PCB-106		NotFnd	<4.5	4.5	U		50
PCB-118	0.00003	23.27	2940	4.8	M		50
PCB-122		23.47	51.6	4.7			50
PCB-114	0.00003	23.58	84.0	5.0			50
PCB-105	0.00003	23.91	1080	5.4			50
PCB-127		NotFnd	<4.2	4.2	U		50
PCB-126	0.1	25.52	<29	5.5	M,J,R	29	50
PCB-155		20.52	2.83	1.5	J		50
PCB-152		20.66	<5.6	1.6	J,R	5.6	50
PCB-150		20.74	<11	1.6	J,R	11	50
PCB-136		20.96	661	1.6			50
PCB-145		NotFnd	<1.7	1.7	U		50
PCB-148		21.85	<6.4	2.1	J,R	6.4	50
PCB-135/151		22.19	1210	2.1			50
PCB-154		22.29	47.3	1.8	J		50
PCB-144		22.48	189	2.1			50
PCB-147/149		22.67	2740	2.7			50
PCB-134/143		22.80	213	3.1			50
PCB-139/140		22.98	74.2	2.7			50
PCB-131		23.12	53.9	3.2			50
PCB-142		NotFnd	<3.0	3.0	U		50
PCB-132		23.36	1060	3.1			50
PCB-133		23.56	40.0	2.9	J		50
PCB-165		23.74	<5.1	2.3	J,R	5.1	50
PCB-146		23.90	323	2.4			50
PCB-161		NotFnd	<2.2	2.2	U		50
PCB-153/168		24.22	1990	2.2			50
PCB-141		24.34	435	2.6			50
PCB-130		24.55	141	3.0			50
PCB-137/164		24.72	250	2.3	M		50
PCB-129/138/163		24.89	2160	2.5			50
PCB-160		NotFnd	<2.1	2.1	U		50
PCB-158		25.10	195	1.8			50
PCB-128/166		25.58	272	2.4			50
PCB-159		26.03	<6.8	2.0	J,R	6.8	50
PCB-162		26.19	<4.6	2.2	J,R	4.6	50
PCB-167	0.00003	26.43	<54	2.2	R	54	50
PCB-156/157	0.00003	27.04	158	3.0			100
PCB-169	0.03	28.70	<4.1	2.5	M,J,R	4.1	50
PCB-188		23.53	6.31	1.9	J		50
PCB-179		23.73	253	1.8			50
PCB-184		23.99	<2.6	1.8	J,R	2.6	50
PCB-176		24.18	64.2	1.8			50
PCB-186		NotFnd	<1.9	1.9	U		50
PCB-178		25.10	84.8	2.4			50
PCB-175		25.42	16.2	2.3	J		50
PCB-187		25.57	495	2.1			50
PCB-182		25.65	<3.8	2.2	J,R	3.8	50
PCB-183		25.88	192	2.2			50
PCB-185		25.96	35.9	2.4	M,J		50
PCB-174		26.03	255	2.2	M		50
PCB-177		26.26	125	2.4			50
PCB-181		26.46	3.37	2.4	J		50
PCB-171/173		26.58	65.3	2.4			50
PCB-172		27.39	<33	2.4	J,R	33	50



# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 1 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-1  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B06  
 Run Date 11-Aug-20 14:03  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-192		NotFnd	<2.0	2.0	U		50
PCB-180/193		27.73	425	2.0			50
PCB-191		27.93	8.78	1.9	J		50
PCB-170		28.41	138	2.5			50
PCB-190		28.69	32.8	1.8	J		50
PCB-189	0.00003	30.00	4.43	1.9	M,J		50
PCB-202		26.31	125	1.2			50
PCB-201		26.78	52.8	1.1			50
PCB-204		NotFnd	<1.1	1.1	U		50
PCB-197		27.24	11.3	1.1	J		50
PCB-200		27.32	<31	1.1	J,R	31	50
PCB-198/199		28.74	<200	1.5	R	200	50
PCB-196		29.07	73.9	1.5			50
PCB-203		29.18	118	1.4			50
PCB-195		29.90	34.5	1.6	J		50
PCB-194		31.13	82.8	1.5			50
PCB-205		31.40	5.21	1.4	J		50
PCB-208		29.74	37.8	3.5	J		50
PCB-207		30.21	15.8	3.9	J		50
PCB-206		32.50	74.3	5.2			50
PCB-209		33.64	<12	1.3	J,R	12	50

**Extraction Standards**

	pg	Time	% Rec	Limits
13C12-PCB-001	4000	8.85	55	5-145
13C12-PCB-003	4000	10.41	61	5-145
13C12-PCB-004	4000	10.56	61	5-145
13C12-PCB-015	4000	14.25	77	5-145
13C12-PCB-019	4000	12.55	54	5-145
13C12-PCB-037	4000	18.20	69	5-145
13C12-PCB-054	4000	14.43	51	5-145
13C12-PCB-081	4000	21.79	68	10-145
13C12-PCB-077	4000	22.09	69	10-145
13C12-PCB-104	4000	17.49	68	10-145
13C12-PCB-123	4000	23.09	68	10-145
13C12-PCB-118	4000	23.26	70	10-145
13C12-PCB-114	4000	23.56	67	10-145
13C12-PCB-105	4000	23.91	64	10-145
13C12-PCB-126	4000	25.51	65	10-145
13C12-PCB-155	4000	20.51	66	10-145
13C12-PCB-167	4000	26.42	94	10-145
13C12-PCB-156/157	8000	27.04	92	10-145
13C12-PCB-169	4000	28.71	98	10-145
13C12-PCB-188	4000	23.51	103	10-145
13C12-PCB-189	4000	30.00	93	10-145
13C12-PCB-202	4000	26.29	78	10-145
13C12-PCB-205	4000	31.40	91	10-145
13C12-PCB-208	4000	29.72	88	10-145
13C12-PCB-206	4000	32.48	100	10-145
13C12-PCB-209	4000	33.61	76	10-145

**Field Spike Standards**

13C12-PCB-031	24000	15.79	108	70-130
13C12-PCB-095	24000	19.10	129	70-130
13C12-PCB-153	24000	24.20	109	70-130

**Cleanup Standards**

13C12-PCB-028	4000	15.96	60	5-145
13C12-PCB-111	4000	22.04	92	10-145
13C12-PCB-178	4000	25.09	92	10-145

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 1 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-1  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B06  
 Run Date 11-Aug-20 14:03  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBIOCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
<b>Homologue Group Totals</b>							
Total MonoCB			17000	3.6	J	200	
Total DiCB			244000	8.3	J	400	
Total TriCB			366000	4.1	J	400	
Total TetraCB			172000	2.5	J	800	
Total PentaCB			42300	1.6	J	800	
Total HexaCB			12300	1.5	J	800	
Total HeptaCB			2240	1.8	J	400	
Total OctaCB			735	1.1	J	400	
Total NonaCB			128	3.5	J	200	
DecaCB			12.0	1.3	J	200	
Total PCB			857000		J	1600	

**Toxic Equivalency - (WHO 2005)**

Lower Bound PCB TEQ 0.178  
 Mid Point PCB TEQ 3.20  
 Upper Bound PCB TEQ 3.20

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.  
 TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency  
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.  
 M Indicates that a peak has been manually integrated.  
 U Indicates that this compound was not detected above the EDL.  
 J Indicates that the analyte was positively identified. The associated numerical result is an estimate.  
 R Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.  
 EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 2 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-2  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B07  
 Run Date 11-Aug-20 14:45  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-001		8.88	229000	8.8			50
PCB-002		10.31	10500	6.7			50
PCB-003		10.44	41500	4.3			50
PCB-004		10.61	1040000	28			50
PCB-010		10.72	34000	12			50
PCB-009		11.85	81300	12			50
PCB-007		11.97	46200	12			50
PCB-006		12.12	201000	12			50
PCB-005		12.32	19200	14	M		50
PCB-008		12.39	704000	11	M		50
PCB-014		13.38	<64	14	R	64	50
PCB-011		13.88	8380	15			50
PCB-012/013		14.06	29700	15			50
PCB-015		14.26	129000	13			50
PCB-019		12.58	143000	4.2			50
PCB-018/030		13.70	676000	4.1			50
PCB-017		13.95	304000	4.8			50
PCB-027		14.07	38500	3.5			50
PCB-024		14.16	10900	3.8			50
PCB-016		14.22	266000	5.5			50
PCB-032		14.52	144000	3.3			50
PCB-034		15.22	1850	27			50
PCB-023		15.32	899	28			50
PCB-026/029		15.49	85000	26			50
PCB-025		15.63	33900	25			50
PCB-031		15.80	369000	25			50
PCB-020/028		15.97	387000	27			50
PCB-021/033		16.11	241000	26			50
PCB-022		16.34	130000	28			50
PCB-036		NotFnd	<26	26		U	50
PCB-039		17.41	727	27			50
PCB-038		17.72	120	28			50
PCB-035		17.97	3000	28			50
PCB-037		18.21	33600	26			50
PCB-054		14.43	1620	2.3			50
PCB-050/053		15.64	46600	5.5			50
PCB-045/051		16.05	60000	5.7			50
PCB-046		16.22	17000	6.3			50
PCB-052		16.97	159000	5.3			50
PCB-073		NotFnd	<4.6	4.6		U	50
PCB-043		17.11	9020	6.4			50
PCB-049/069		17.24	93800	4.9			50
PCB-048		17.41	45900	5.5			50
PCB-044/047/065		17.53	135000	5.1			50
PCB-059/062/075		17.71	13800	4.3			50
PCB-042		17.83	37200	5.8			50
PCB-040/041/071		18.09	73800	5.5			50
PCB-064		18.22	50200	4.1			50
PCB-072		18.63	380	7.7			50
PCB-068		18.79	168	7.4			50
PCB-057		19.02	450	8.0			50
PCB-058		19.14	114	8.1	M		50
PCB-067		19.25	2360	7.0			50
PCB-063		19.39	2220	7.6			50
PCB-061/070/074/076		19.57	76600	7.8			50
PCB-066		19.75	33600	7.4			50
PCB-055		19.86	1270	8.3			50
PCB-056		20.12	15100	8.2			50
PCB-060		20.24	9720	8.1			50
PCB-080		NotFnd	<6.9	6.9		U	50
PCB-079		21.24	126	7.0			50
PCB-078		21.59	<13	8.0	M,J,R	13	50
PCB-081		21.80	94.5	8.0			50
PCB-077	0.0001	22.10	1550	8.1			50
PCB-104		17.50	12.8	1.1	J		50
PCB-096		17.73	986	1.1			50
PCB-103		18.74	286	6.5			50
PCB-094		18.87	<330	7.7	R	330	50
PCB-095		19.11	27700	6.9			50
PCB-093/098/100/102		19.29	2380	7.0			50

ALS Life Sciences

Sample Analysis Report

**Sample Name** SITE 2 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-2  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
 E. Sabljic  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B07  
 Run Date 11-Aug-20 14:45  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-088/091		19.58	5390	7.1			50
PCB-084		19.71	8040	7.7			50
PCB-089		19.97	536	7.4			50
PCB-121		20.11	<5.4	5.3	J,R	5.4	50
PCB-092		20.34	3770	7.1			50
PCB-090/101/113		20.65	20100	6.1			50
PCB-083/099		20.96	11400	7.2			50
PCB-112		NotFnd	<5.0	5.0	U		50
PCB-086/087/097/109/119/125		21.30	13600	5.9	M		50
PCB-085/110/115/116/117		21.71	21400	5.5	M		50
PCB-082		21.90	2230	7.6			50
PCB-111		NotFnd	<5.1	5.1	U		50
PCB-120		22.29	20.9	4.9	J		50
PCB-108/124		22.91	429	6.4			50
PCB-107		23.04	678	6.1			50
PCB-123	0.00003	23.10	202	7.3			50
PCB-106		NotFnd	<6.3	6.3	U		50
PCB-118	0.00003	23.27	9520	6.6	M		50
PCB-122		23.47	163	6.6			50
PCB-114	0.00003	23.58	319	7.3			50
PCB-105	0.00003	23.91	4140	7.4			50
PCB-127		24.69	<6.0	6.0	M,U	5.7	50
PCB-126	0.1	25.52	<40	8.0	J,R	40	50
PCB-155		20.51	<1.6	1.3	J,R	1.6	50
PCB-152		20.67	18.3	1.3	J		50
PCB-150		20.73	21.6	1.3	J		50
PCB-136		20.96	1420	1.3			50
PCB-145		21.10	<7.5	1.4	J,R	7.5	50
PCB-148		21.83	9.08	1.7	J		50
PCB-135/151		22.18	2350	1.7			50
PCB-154		22.29	80.9	1.4			50
PCB-144		22.47	376	1.7			50
PCB-147/149		22.67	5630	4.8			50
PCB-134/143		22.79	483	5.6			50
PCB-139/140		22.98	182	4.9			50
PCB-131		23.10	135	5.7			50
PCB-142		23.20	<5.4	5.4	U		50
PCB-132		23.35	2530	5.6			50
PCB-133		23.55	79.3	5.1			50
PCB-165		23.73	<6.9	4.2	J,R	6.9	50
PCB-146		23.89	698	4.3			50
PCB-161		NotFnd	<3.9	3.9	U		50
PCB-153/168		24.22	4290	4.0			50
PCB-141		24.34	980	4.7			50
PCB-130		24.55	372	5.4			50
PCB-137/164		24.72	671	4.1	M		50
PCB-129/138/163		24.89	5580	4.5			50
PCB-160		NotFnd	<3.8	3.8	U		50
PCB-158		25.10	546	3.3			50
PCB-128/166		25.57	845	4.2			50
PCB-159		26.03	17.1	3.6	J		50
PCB-162		26.17	15.7	3.9	J		50
PCB-167	0.00003	26.43	203	3.9			50
PCB-156/157	0.00003	27.04	626	5.3			100
PCB-169	0.03	28.69	<6.2	4.2	J,R	6.2	50
PCB-188		23.53	6.00	1.6	J		50
PCB-179		23.73	370	1.4			50
PCB-184		23.97	<4.2	1.4	J,R	4.2	50
PCB-176		24.18	107	1.5			50
PCB-186		NotFnd	<1.5	1.5	U		50
PCB-178		25.10	127	1.9			50
PCB-175		25.42	32.6	1.8	J		50
PCB-187		25.56	801	1.7			50
PCB-182		25.67	<6.7	1.8	J,R	6.7	50
PCB-183		25.88	365	1.8			50
PCB-185		25.96	45.9	1.9	M,J		50
PCB-174		26.03	521	1.8	M		50
PCB-177		26.26	272	1.9			50
PCB-181		26.44	<4.4	1.9	J,R	4.4	50
PCB-171/173		26.58	166	2.0			50
PCB-172		27.38	86.6	1.9			50

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 2 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-2  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B07  
 Run Date 11-Aug-20 14:45  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-192		NotFnd	<1.7	1.7	U		50
PCB-180/193		27.72	1130	1.6			50
PCB-191		27.91	<20	1.5	J,R	20	50
PCB-170		28.41	472	2.0			50
PCB-190		28.67	87.7	1.4			50
PCB-189	0.00003	30.00	<17	1.7	M,J,R	17	50
PCB-202		26.29	137	0.90			50
PCB-201		26.78	63.9	0.87			50
PCB-204		NotFnd	<0.88	0.88	U		50
PCB-197		27.25	<12	0.88	J,R	12	50
PCB-200		27.32	52.6	0.88			50
PCB-198/199		28.74	393	1.2			50
PCB-196		29.07	150	1.2			50
PCB-203		29.17	252	1.1			50
PCB-195		29.89	67.9	1.7			50
PCB-194		31.13	211	1.6			50
PCB-205		31.40	11.4	1.6	J		50
PCB-208		29.74	58.5	3.0			50
PCB-207		30.21	29.2	3.5	J		50
PCB-206		32.48	<160	5.0	R	160	50
PCB-209		33.64	52.1	1.1			50

**Extraction Standards**

	pg	Time	% Rec	Limits
13C12-PCB-001	4000	8.88	68	5-145
13C12-PCB-003	4000	10.42	71	5-145
13C12-PCB-004	4000	10.61	64	5-145
13C12-PCB-015	4000	14.25	79	5-145
13C12-PCB-019	4000	12.57	55	5-145
13C12-PCB-037	4000	18.19	71	5-145
13C12-PCB-054	4000	14.43	59	5-145
13C12-PCB-081	4000	21.79	70	10-145
13C12-PCB-077	4000	22.08	72	10-145
13C12-PCB-104	4000	17.49	73	10-145
13C12-PCB-123	4000	23.09	71	10-145
13C12-PCB-118	4000	23.26	72	10-145
13C12-PCB-114	4000	23.56	69	10-145
13C12-PCB-105	4000	23.90	67	10-145
13C12-PCB-126	4000	25.50	70	10-145
13C12-PCB-155	4000	20.51	71	10-145
13C12-PCB-167	4000	26.42	98	10-145
13C12-PCB-156/157	8000	27.04	97	10-145
13C12-PCB-169	4000	28.70	106	10-145
13C12-PCB-188	4000	23.50	97	10-145
13C12-PCB-189	4000	29.99	92	10-145
13C12-PCB-202	4000	26.28	82	10-145
13C12-PCB-205	4000	31.38	91	10-145
13C12-PCB-208	4000	29.72	95	10-145
13C12-PCB-206	4000	32.47	100	10-145
13C12-PCB-209	4000	33.61	73	10-145

**Field Spike Standards**

13C12-PCB-031	24000	15.79	113	70-130
13C12-PCB-095	24000	19.10	120	70-130
13C12-PCB-153	24000	24.20	99	70-130

**Cleanup Standards**

13C12-PCB-028	4000	15.96	67	5-145
13C12-PCB-111	4000	22.03	94	10-145
13C12-PCB-178	4000	25.09	92	10-145

# ALS Life Sciences

## Sample Analysis Report

<b>Sample Name</b> SITE 2 - COMPOSITE 1 (JULY)	Sampling Date	n/a	
ALS Sample ID L2479138-2	Extraction Date	30-Jul-20	
Analysis Method EPA 1668C	Sample Size	1	Sample
Analysis Type Sample	Percent Moisture	n/a	
Sample Matrix PUF	Split Ratio	2	

Approved:  
E. Sabljic  
--e-signature--  
12-Aug-2020

<b>Run Information</b>	<b>Run 1</b>
Filename	5-200811B07
Run Date	11-Aug-20 14:45
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
<b>Homologue Group Totals</b>							
Total MonoCB			281000	4.3	J	200	
Total DiCB			2290000	11	J	400	
Total TriCB			2870000	3.3	J	400	
Total TetraCB			887000	2.3	J	800	
Total PentaCB			134000	1.1	J	800	
Total HexaCB			28200	1.3	J	800	
Total HeptaCB			4640	1.4	J	400	
Total OctaCB			1350	0.87	J	400	
Total NonaCB			248	3.0	J	200	
DecaCB			52.1	1.1	J	200	
Total PCB			6500000		J	1600	
<b>Toxic Equivalency - (WHO 2005)</b>							
Lower Bound PCB TEQ			0.634				
Mid Point PCB TEQ			4.82				
Upper Bound PCB TEQ			4.82				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 3 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-3  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B08  
 Run Date 11-Aug-20 15:28  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-001		8.87	67200	5.3			50
PCB-002		10.28	3840	5.5			50
PCB-003		10.41	13400	4.3			50
PCB-004		10.59	372000	27			50
PCB-010		10.69	12100	12			50
PCB-009		11.84	30400	12			50
PCB-007		11.95	17500	12			50
PCB-006		12.11	81300	12			50
PCB-005		12.30	6980	14	M		50
PCB-008		12.37	327000	11	M		50
PCB-014		13.37	38.8	14	J		50
PCB-011		13.87	8610	14			50
PCB-012/013		14.06	15300	14			50
PCB-015		14.25	53900	12			50
PCB-019		12.57	54400	5.5			50
PCB-018/030		13.69	290000	6.5			50
PCB-017		13.94	129000	7.6			50
PCB-027		14.07	17300	5.6			50
PCB-024		14.15	4220	6.1			50
PCB-016		14.22	115000	8.8			50
PCB-032		14.52	62900	5.2			50
PCB-034		15.21	814	19			50
PCB-023		15.31	385	19			50
PCB-026/029		15.48	38900	18			50
PCB-025		15.63	15300	17			50
PCB-031		15.80	165000	17	M		50
PCB-020/028		15.97	176000	19	M		50
PCB-021/033		16.10	108000	18			50
PCB-022		16.34	57400	20			50
PCB-036		NotFnd	<18	18	U		50
PCB-039		17.41	369	19			50
PCB-038		17.72	55.2	20			50
PCB-035		17.98	2170	20			50
PCB-037		18.21	17100	19			50
PCB-054		14.43	701	2.7			50
PCB-050/053		15.64	21200	6.3			50
PCB-045/051		16.04	28000	6.6			50
PCB-046		16.22	7920	7.2			50
PCB-052		16.97	82700	6.0			50
PCB-073		NotFnd	<5.3	5.3	U		50
PCB-043		17.11	4720	7.3			50
PCB-049/069		17.24	48600	5.6			50
PCB-048		17.41	24000	6.3			50
PCB-044/047/065		17.53	69800	5.8			50
PCB-059/062/075		17.71	7230	4.9			50
PCB-042		17.83	19200	6.6			50
PCB-040/041/071		18.09	38200	6.2			50
PCB-064		18.22	26400	4.7			50
PCB-072		18.63	235	8.1			50
PCB-068		18.79	<100	7.8	R	100	50
PCB-057		19.03	251	8.4			50
PCB-058		19.15	53.6	8.5	M		50
PCB-067		19.25	1370	7.4			50
PCB-063		19.40	1250	8.0			50
PCB-061/070/074/076		19.57	45000	8.2			50
PCB-066		19.75	19600	7.8			50
PCB-055		19.86	731	8.7			50
PCB-056		20.13	9030	8.6			50
PCB-060		20.25	5730	8.5			50
PCB-080		NotFnd	<7.3	7.3	U		50
PCB-079		21.25	101	7.4			50
PCB-078		21.59	<15	8.4	M,J,R	15	50
PCB-081	0.0003	21.81	56.3	8.4			50
PCB-077	0.0001	22.10	1030	8.5			50
PCB-104		17.51	7.17	1.9	J		50
PCB-096		17.73	500	1.9			50
PCB-103		18.74	183	8.3			50
PCB-094		18.87	212	9.9			50
PCB-095		19.12	17000	8.8			50
PCB-093/098/100/102		19.30	1380	8.9			50

ALS Life Sciences

Sample Analysis Report

**Sample Name** SITE 3 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-3  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
 E. Sabljic  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B08  
 Run Date 11-Aug-20 15:28  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-088/091		19.58	3320	9.1			50
PCB-084		19.72	4950	9.8			50
PCB-089		19.97	306	9.4			50
PCB-121		NotFnd	<6.8	6.8	U		50
PCB-092		20.34	2660	9.0			50
PCB-090/101/113		20.65	14600	7.8			50
PCB-083/099		20.97	8120	9.2			50
PCB-112		NotFnd	<6.4	6.4	U		50
PCB-086/087/097/109/119/125		21.30	9720	7.6	M		50
PCB-085/110/115/116/117		21.71	15200	7.1	M		50
PCB-082		21.91	1450	9.8			50
PCB-111		NotFnd	<6.5	6.5	U		50
PCB-120		22.30	<19	6.2	J,R	19	50
PCB-108/124		22.91	265	7.3			50
PCB-107		23.04	428	7.0			50
PCB-123	0.00003	23.10	108	8.1			50
PCB-106		NotFnd	<7.2	7.2	U		50
PCB-118	0.00003	23.27	6010	7.5	M		50
PCB-122		23.47	104	7.5			50
PCB-114	0.00003	23.58	192	8.3			50
PCB-105	0.00003	23.91	2390	8.7			50
PCB-127		NotFnd	<6.8	6.8	U		50
PCB-126	0.1	25.53	<46	9.0	M,J,R	46	50
PCB-155		20.52	<3.1	1.5	J,R	3.1	50
PCB-152		20.66	15.0	1.7	J		50
PCB-150		20.74	<18	1.6	J,R	18	50
PCB-136		20.96	1070	1.7			50
PCB-145		21.11	<1.7	1.7	U	1.6	50
PCB-148		21.84	9.61	2.2	J		50
PCB-135/151		22.18	1950	2.2			50
PCB-154		22.29	81.5	1.8			50
PCB-144		22.48	301	2.2			50
PCB-147/149		22.67	4290	4.0			50
PCB-134/143		22.79	344	4.6			50
PCB-139/140		22.98	128	4.0			50
PCB-131		23.12	98.9	4.7			50
PCB-142		NotFnd	<4.5	4.5	U		50
PCB-132		23.36	1760	4.6			50
PCB-133		23.56	60.0	4.3			50
PCB-165		23.74	8.03	3.5	J		50
PCB-146		23.89	528	3.6			50
PCB-161		NotFnd	<3.2	3.2	U		50
PCB-153/168		24.22	3290	3.3			50
PCB-141		24.34	679	3.9			50
PCB-130		24.55	235	4.4			50
PCB-137/164		24.72	455	3.4	M		50
PCB-129/138/163		24.89	3700	3.7			50
PCB-160		NotFnd	<3.1	3.1	U		50
PCB-158		25.10	359	2.7			50
PCB-128/166		25.58	519	3.5			50
PCB-159		26.03	11.9	3.0	J		50
PCB-162		26.17	<9.2	3.2	J,R	9.2	50
PCB-167	0.00003	26.43	118	3.2			50
PCB-156/157	0.00003	27.04	351	4.5			100
PCB-169	0.03	28.74	<7.8	3.7	J,R	7.8	50
PCB-188		23.53	10.1	1.7	J		50
PCB-179		23.73	365	1.7			50
PCB-184		23.97	<4.5	1.7	J,R	4.5	50
PCB-176		24.18	89.2	1.7			50
PCB-186		NotFnd	<1.8	1.8	U		50
PCB-178		25.10	133	2.2			50
PCB-175		25.42	<23	2.1	J,R	23	50
PCB-187		25.57	850	2.0			50
PCB-182		NotFnd	<2.1	2.1	U		50
PCB-183		25.88	330	2.1			50
PCB-185		25.98	38.4	2.3	M,J		50
PCB-174		26.03	384	2.1	M		50
PCB-177		26.26	193	2.3			50
PCB-181		26.46	<3.8	2.3	J,R	3.8	50
PCB-171/173		26.58	102	2.3			50
PCB-172		27.39	58.8	2.2			50



# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 3 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-3  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B08  
 Run Date 11-Aug-20 15:28  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-192		NotFnd	<1.9	1.9		U	50
PCB-180/193		27.73	761	1.9			50
PCB-191		27.91	12.7	1.8		J	50
PCB-170		28.41	239	2.4			50
PCB-190		28.69	57.6	1.7			50
PCB-189	0.00003	30.00	<10	2.2	M,J,R	10	50
PCB-202		26.31	232	1.5			50
PCB-201		26.78	96.4	1.4			50
PCB-204		NotFnd	<1.4	1.4		U	50
PCB-197		27.25	<15	1.4		J,R	15
PCB-200		27.32	58.3	1.4			50
PCB-198/199		28.74	396	1.9			50
PCB-196		29.07	131	1.9			50
PCB-203		29.18	257	1.8			50
PCB-195		29.90	51.6	1.9			50
PCB-194		31.13	163	1.8			50
PCB-205		31.41	<5.2	1.7		J,R	5.2
PCB-208		29.74	<59	3.1		R	59
PCB-207		30.21	32.4	3.6		J	50
PCB-206		32.50	134	5.0			50
PCB-209		33.64	32.6	1.7		J	50

**Extraction Standards**

	pg	Time	% Rec	Limits
13C12-PCB-001	4000	8.87	66	5-145
13C12-PCB-003	4000	10.41	72	5-145
13C12-PCB-004	4000	10.58	72	5-145
13C12-PCB-015	4000	14.24	86	5-145
13C12-PCB-019	4000	12.55	66	5-145
13C12-PCB-037	4000	18.20	76	5-145
13C12-PCB-054	4000	14.43	63	5-145
13C12-PCB-081	4000	21.80	73	10-145
13C12-PCB-077	4000	22.09	74	10-145
13C12-PCB-104	4000	17.49	75	10-145
13C12-PCB-123	4000	23.09	75	10-145
13C12-PCB-118	4000	23.26	76	10-145
13C12-PCB-114	4000	23.56	73	10-145
13C12-PCB-105	4000	23.90	71	10-145
13C12-PCB-126	4000	25.51	73	10-145
13C12-PCB-155	4000	20.51	78	10-145
13C12-PCB-167	4000	26.42	105	10-145
13C12-PCB-156/157	8000	27.04	101	10-145
13C12-PCB-169	4000	28.71	109	10-145
13C12-PCB-188	4000	23.51	118	10-145
13C12-PCB-189	4000	29.99	98	10-145
13C12-PCB-202	4000	26.29	90	10-145
13C12-PCB-205	4000	31.40	104	10-145
13C12-PCB-208	4000	29.72	108	10-145
13C12-PCB-206	4000	32.48	115	10-145
13C12-PCB-209	4000	33.61	84	10-145

**Field Spike Standards**

13C12-PCB-031	24000	15.78	110	70-130
13C12-PCB-095	24000	19.10	123	70-130
13C12-PCB-153	24000	24.20	110	70-130

**Cleanup Standards**

13C12-PCB-028	4000	15.96	67	5-145
13C12-PCB-111	4000	22.03	98	10-145
13C12-PCB-178	4000	25.09	96	10-145

# ALS Life Sciences

## Sample Analysis Report

<b>Sample Name</b> SITE 3 - COMPOSITE 1 (JULY)	Sampling Date	n/a	
ALS Sample ID L2479138-3	Extraction Date	30-Jul-20	
Analysis Method EPA 1668C	Sample Size	1	Sample
Analysis Type Sample	Percent Moisture	n/a	
Sample Matrix PUF	Split Ratio	2	

Approved:  
E. Sabljic  
--e-signature--  
12-Aug-2020

<b>Run Information</b>	<b>Run 1</b>
Filename	5-200811B08
Run Date	11-Aug-20 15:28
Final Volume	25 ul
Dilution Factor	1
Analysis Units	pg
Instrument - Column	HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
<b>Homologue Group Totals</b>							
Total MonoCB			84400	4.3	J	200	
Total DiCB			925000	11	J	400	
Total TriCB			1250000	5.2	J	400	
Total TetraCB			463000	2.7	J	800	
Total PentaCB			89200	1.9	J	800	
Total HexaCB			20400	1.5	J	800	
Total HeptaCB			3670	1.7	J	400	
Total OctaCB			1410	1.4	J	400	
Total NonaCB			225	3.1	J	200	
DecaCB			32.6	1.7	J	200	
Total PCB			2840000		J	1600	
<b>Toxic Equivalency - (WHO 2005)</b>							
Lower Bound PCB TEQ			0.395				
Mid Point PCB TEQ			5.23				
Upper Bound PCB TEQ			5.23				

EDL	Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.
TEF	Indicates the Toxic Equivalency Factor
LQL	Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.
M	Indicates that a peak has been manually integrated.
U	Indicates that this compound was not detected above the EDL.
J	Indicates that the analyte was positively identified. The associated numerical result is an estimate.
R	Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.
EMPC	Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 4 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-4  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B09  
 Run Date 11-Aug-20 16:10  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-001		8.87	109000	7.3			50
PCB-002		10.28	6290	8.1			50
PCB-003		10.41	23400	6.7			50
PCB-004		10.58	797000	28			50
PCB-010		10.69	24600	12			50
PCB-009		11.84	62600	11			50
PCB-007		11.95	35400	12			50
PCB-006		12.11	167000	11			50
PCB-005		12.30	13000	13	M		50
PCB-008		12.39	710000	11	M		50
PCB-014		13.37	<56	17	R	56	50
PCB-011		13.87	14700	18			50
PCB-012/013		14.06	30500	18			50
PCB-015		14.25	137000	15			50
PCB-019		12.57	135000	5.3			50
PCB-018/030		13.69	670000	11			50
PCB-017		13.94	304000	13			50
PCB-027		14.07	38900	9.5			50
PCB-024		14.15	9690	10			50
PCB-016		14.22	273000	15			50
PCB-032		14.52	149000	8.9			50
PCB-034		15.22	2030	25			50
PCB-023		15.31	908	25			50
PCB-026/029		15.48	95300	24			50
PCB-025		15.63	38000	23			50
PCB-031		15.80	429000	23			50
PCB-020/028		15.98	454000	25			50
PCB-021/033		16.11	279000	24			50
PCB-022		16.34	153000	26			50
PCB-036		NotFnd	<24	24		U	50
PCB-039		17.41	1020	24			50
PCB-038		17.72	167	26			50
PCB-035		17.98	4640	26	M		50
PCB-037		18.21	48200	23			50
PCB-054		14.43	1750	3.1			50
PCB-050/053		15.64	53200	9.0			50
PCB-045/051		16.05	71200	9.3			50
PCB-046		16.22	20500	10			50
PCB-052		16.97	227000	8.6			50
PCB-073		NotFnd	<7.4	7.4		U	50
PCB-043		17.11	12300	10			50
PCB-049/069		17.24	133000	7.9			50
PCB-048		17.41	64600	8.9			50
PCB-044/047/065		17.53	192000	8.2			50
PCB-059/062/075		17.72	19900	6.9			50
PCB-042		17.83	53200	9.3			50
PCB-040/041/071		18.10	107000	8.8			50
PCB-064		18.22	74800	6.7			50
PCB-072		18.63	645	14			50
PCB-068		18.80	307	14			50
PCB-057		19.03	717	15			50
PCB-058		19.15	184	15	M		50
PCB-067		19.25	4030	13			50
PCB-063		19.40	3780	14			50
PCB-061/070/074/076		19.57	135000	14			50
PCB-066		19.75	59800	14			50
PCB-055		19.86	2190	15			50
PCB-056		20.13	27600	15			50
PCB-060		20.25	17200	15			50
PCB-080		NotFnd	<13	13		U	50
PCB-079		21.25	230	13			50
PCB-078		21.59	38.7	15	J		50
PCB-081		21.81	187	14			50
PCB-077	0.0001	22.10	3130	15			50
PCB-104		17.51	20.8	2.2	J		50
PCB-096		17.74	1320	2.1			50
PCB-103		18.74	514	7.3			50
PCB-094		18.87	587	8.7			50
PCB-095		19.12	48600	7.8			50
PCB-093/098/100/102		19.30	3960	7.9			50

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 4 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-4  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B09  
 Run Date 11-Aug-20 16:10  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-088/091		19.58	9860	8.1			50
PCB-084		19.72	14700	8.7			50
PCB-089		19.97	942	8.3			50
PCB-121		NotFnd	<6.0	6.0	U		50
PCB-092		20.35	7540	8.0			50
PCB-090/101/113		20.65	39800	6.9			50
PCB-083/099		20.97	21800	8.1			50
PCB-112		NotFnd	<5.7	5.7	U		50
PCB-086/087/097/109/119/125		21.30	25900	6.7	M		50
PCB-085/110/115/116/117		21.71	40600	6.3	M		50
PCB-082		21.91	4090	8.7			50
PCB-111		NotFnd	<5.7	5.7	U		50
PCB-120		22.29	<46	5.5	J,R	46	50
PCB-108/124		22.91	779	8.5			50
PCB-107		23.04	1230	8.1			50
PCB-123	0.00003	23.10	333	9.6			50
PCB-106		NotFnd	<8.4	8.4	U		50
PCB-118	0.00003	23.27	16800	8.5	M		50
PCB-122		23.47	291	8.7			50
PCB-114	0.00003	23.58	552	9.6			50
PCB-105	0.00003	23.93	7460	10			50
PCB-127		24.67	15.6	7.9	M,J		50
PCB-126	0.1	25.52	<76	11	R	76	50
PCB-155		NotFnd	<1.2	1.2	U		50
PCB-152		20.67	<30	1.5	J,R	30	50
PCB-150		20.74	49.6	1.4	J		50
PCB-136		20.96	2880	1.5			50
PCB-145		21.10	<14	1.5	J,R	14	50
PCB-148		21.84	<18	1.9	J,R	18	50
PCB-135/151		22.19	4720	1.9			50
PCB-154		22.30	181	1.6			50
PCB-144		22.48	739	1.9			50
PCB-147/149		22.67	11100	4.6			50
PCB-134/143		22.80	954	5.4			50
PCB-139/140		22.98	369	4.6			50
PCB-131		23.12	259	5.4			50
PCB-142		23.20	<5.2	5.2	U	3.6	50
PCB-132		23.36	4900	5.3			50
PCB-133		23.56	158	4.9			50
PCB-165		23.74	<8.8	4.0	J,R	8.8	50
PCB-146		23.90	1400	4.1			50
PCB-161		NotFnd	<3.7	3.7	U		50
PCB-153/168		24.22	8660	3.8			50
PCB-141		24.34	1860	4.5			50
PCB-130		24.55	743	5.1			50
PCB-137/164		24.72	1290	4.0	M		50
PCB-129/138/163		24.89	10500	4.3			50
PCB-160		NotFnd	<3.6	3.6	U		50
PCB-158		25.10	1060	3.1			50
PCB-128/166		25.58	1600	4.0			50
PCB-159		26.03	32.6	3.5	J		50
PCB-162		26.17	<29	3.7	J,R	29	50
PCB-167	0.00003	26.43	361	3.8			50
PCB-156/157	0.00003	27.04	1160	5.3			100
PCB-169	0.03	28.70	<9.3	4.3	M,J,R	9.3	50
PCB-188		23.53	<13	2.0	J,R	13	50
PCB-179		23.73	645	2.0			50
PCB-184		23.99	7.77	2.0	J		50
PCB-176		24.19	181	2.1			50
PCB-186		NotFnd	<2.1	2.1	U		50
PCB-178		25.10	239	2.6			50
PCB-175		25.44	52.0	2.5			50
PCB-187		25.57	1540	2.4			50
PCB-182		25.67	13.0	2.4	J		50
PCB-183		25.88	645	2.5	M		50
PCB-185		25.97	104	2.7	M		50
PCB-174		26.03	846	2.4	M		50
PCB-177		26.27	438	2.7			50
PCB-181		26.46	14.9	2.7	J		50
PCB-171/173		26.60	242	2.7			50
PCB-172		27.39	144	2.7			50

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 4 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-4  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B09  
 Run Date 11-Aug-20 16:10  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-192		NotFnd	<2.3	2.3	U		50
PCB-180/193		27.73	1810	2.3			50
PCB-191		27.91	30.8	2.1	J		50
PCB-170		28.41	700	2.8			50
PCB-190		28.69	142	2.0			50
PCB-189	0.00003	30.00	31.2	2.5	J		50
PCB-202		26.31	360	1.3			50
PCB-201		26.78	171	1.2			50
PCB-204		NotFnd	<1.2	1.2	U		50
PCB-197		27.24	<26	1.3	J,R	26	50
PCB-200		27.33	103	1.3			50
PCB-198/199		28.74	811	1.7			50
PCB-196		29.07	280	1.7			50
PCB-203		29.18	530	1.6			50
PCB-195		29.90	136	1.9			50
PCB-194		31.13	409	1.8			50
PCB-205		31.41	17.0	1.8	J		50
PCB-208		29.75	147	3.5			50
PCB-207		30.22	<64	4.1	R	64	50
PCB-206		32.50	374	5.8			50
PCB-209		33.64	106	1.9			50

**Extraction Standards**

	pg	Time	% Rec	Limits
13C12-PCB-001	4000	8.87	46	5-145
13C12-PCB-003	4000	10.41	52	5-145
13C12-PCB-004	4000	10.56	50	5-145
13C12-PCB-015	4000	14.24	64	5-145
13C12-PCB-019	4000	12.57	45	5-145
13C12-PCB-037	4000	18.20	58	5-145
13C12-PCB-054	4000	14.43	44	5-145
13C12-PCB-081	4000	21.80	51	10-145
13C12-PCB-077	4000	22.09	52	10-145
13C12-PCB-104	4000	17.49	53	10-145
13C12-PCB-123	4000	23.09	52	10-145
13C12-PCB-118	4000	23.26	55	10-145
13C12-PCB-114	4000	23.56	51	10-145
13C12-PCB-105	4000	23.91	49	10-145
13C12-PCB-126	4000	25.51	49	10-145
13C12-PCB-155	4000	20.51	56	10-145
13C12-PCB-167	4000	26.42	76	10-145
13C12-PCB-156/157	8000	27.04	73	10-145
13C12-PCB-169	4000	28.71	78	10-145
13C12-PCB-188	4000	23.51	88	10-145
13C12-PCB-189	4000	30.00	73	10-145
13C12-PCB-202	4000	26.29	66	10-145
13C12-PCB-205	4000	31.40	75	10-145
13C12-PCB-208	4000	29.74	81	10-145
13C12-PCB-206	4000	32.48	81	10-145
13C12-PCB-209	4000	33.63	65	10-145

**Field Spike Standards**

13C12-PCB-031	24000	15.79	96	70-130
13C12-PCB-095	24000	19.10	121	70-130
13C12-PCB-153	24000	24.20	106	70-130

**Cleanup Standards**

13C12-PCB-028	4000	15.96	55	5-145
13C12-PCB-111	4000	22.04	76	10-145
13C12-PCB-178	4000	25.09	77	10-145

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 4 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-4  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B09  
 Run Date 11-Aug-20 16:10  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
<b>Homologue Group Totals</b>							
Total MonoCB			139000	6.7	J	200	
Total DiCB			1990000	11	J	400	
Total TriCB			3080000	5.3	J	400	
Total TetraCB			1290000	3.1	J	800	
Total PentaCB			248000	2.1	J	800	
Total HexaCB			55100	1.2	J	800	
Total HeptaCB			7840	2.0	J	400	
Total OctaCB			2840	1.2	J	400	
Total NonaCB			585	3.5	J	200	
DecaCB			106	1.9	J	200	
Total PCB			6820000		J	1600	

**Toxic Equivalency - (WHO 2005)**

Lower Bound PCB TEQ	1.17
Mid Point PCB TEQ	9.05
Upper Bound PCB TEQ	9.05

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.  
 TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency  
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.  
 M Indicates that a peak has been manually integrated.  
 U Indicates that this compound was not detected above the EDL.  
 J Indicates that the analyte was positively identified. The associated numerical result is an estimate.  
 R Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.  
 EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 5 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-5  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** **Run 1**  
 Filename 5-200811B10  
 Run Date 11-Aug-20 16:52  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-001		8.92	213000	220		M	50
PCB-002		10.49	11800	47			50
PCB-003		10.61	43100	21			50
PCB-004		10.76	1060000	21			50
PCB-010		10.84	37700	9.6			50
PCB-009		11.95	95600	9.4			50
PCB-007		12.06	53400	9.7			50
PCB-006		12.22	218000	9.5			50
PCB-005		12.41	18500	11		M	50
PCB-008		12.48	775000	8.8		M	50
PCB-014		13.44	<85	17		R 85	50
PCB-011		13.94	15100	18			50
PCB-012/013		14.11	38800	18			50
PCB-015		14.32	169000	16			50
PCB-019		12.68	161000	4.8			50
PCB-018/030		13.76	823000	6.9			50
PCB-017		14.00	389000	8.1			50
PCB-027		14.12	50100	5.9			50
PCB-024		14.21	13600	6.4			50
PCB-016		14.28	340000	9.4			50
PCB-032		14.57	184000	5.6			50
PCB-034		15.26	2690	26			50
PCB-023		15.36	1290	26			50
PCB-026/029		15.53	120000	25			50
PCB-025		15.66	47500	23			50
PCB-031		15.84	524000	24			50
PCB-020/028		16.01	546000	25			50
PCB-021/033		16.14	336000	25			50
PCB-022		16.37	181000	27			50
PCB-036		NotFnd	<25	25		U	50
PCB-039		17.43	1080	25			50
PCB-038		17.74	186	26			50
PCB-035		18.00	4840	27			50
PCB-037		18.23	54000	26			50
PCB-054		14.49	2020	1.9			50
PCB-050/053		15.68	61800	5.4			50
PCB-045/051		16.09	79700	5.6			50
PCB-046		16.25	22900	6.2			50
PCB-052		17.00	231000	5.2			50
PCB-073		NotFnd	<4.5	4.5		U	50
PCB-043		17.14	12300	6.3			50
PCB-049/069		17.27	134000	4.8			50
PCB-048		17.43	66000	5.4			50
PCB-044/047/065		17.56	191000	5.0			50
PCB-059/062/075		17.74	20000	4.2			50
PCB-042		17.85	52100	5.6			50
PCB-040/041/071		18.12	104000	5.3			50
PCB-064		18.24	73200	4.0			50
PCB-072		18.65	666	9.5			50
PCB-068		18.81	296	9.1			50
PCB-057		19.05	728	9.8			50
PCB-058		19.16	202	10		M	50
PCB-067		19.26	4050	8.7			50
PCB-063		19.41	3780	9.3			50
PCB-061/070/074/076		19.59	131000	9.6			50
PCB-066		19.77	56900	9.1			50
PCB-055		19.87	1920	10			50
PCB-056		20.14	26000	10			50
PCB-060		20.26	16900	10			50
PCB-080		NotFnd	<8.5	8.5		U	50
PCB-079		21.26	<190	8.6		R 190	50
PCB-078		21.59	<36	9.8		M,J,R 36	50
PCB-081	0.0003	21.82	185	10			50
PCB-077	0.0001	22.11	3150	10			50
PCB-104		17.53	21.2	2.0		J	50
PCB-096		17.76	1410	1.8			50
PCB-103		18.75	489	6.7			50
PCB-094		18.88	536	8.0			50
PCB-095		19.13	43800	7.1			50
PCB-093/098/100/102		19.31	3650	7.2			50

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 5 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-5  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B10  
 Run Date 11-Aug-20 16:52  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-088/091		19.60	8650	7.4			50
PCB-084		19.73	13100	7.9			50
PCB-089		19.99	859	7.6			50
PCB-121		20.13	<5.5	5.5	U	2.9	50
PCB-092		20.36	6650	7.3			50
PCB-090/101/113		20.66	35200	6.3			50
PCB-083/099		20.97	19500	7.4			50
PCB-112		NotFnd	<5.2	5.2			50
PCB-086/087/097/109/119/125		21.31	23000	6.1		M	50
PCB-085/110/115/116/117		21.72	35100	5.7		M	50
PCB-082		21.92	3560	7.9			50
PCB-111		22.05	7.26	5.2		J	50
PCB-120		22.30	43.3	5.0		J	50
PCB-108/124		22.92	850	7.4			50
PCB-107		23.06	1340	7.0			50
PCB-123	0.00003	23.12	301	8.4			50
PCB-106		NotFnd	<7.3	7.3		U	50
PCB-118	0.00003	23.28	17100	7.3		M	50
PCB-122		23.48	278	7.5			50
PCB-114	0.00003	23.59	573	8.2			50
PCB-105	0.00003	23.93	7560	8.4			50
PCB-127		24.67	<10	6.9	M,J,R	10	50
PCB-126	0.1	25.52	<82	9.3		R	82
PCB-155		20.56	5.58	1.9		J	50
PCB-152		20.68	33.8	1.5		J	50
PCB-150		20.75	42.9	1.5		J	50
PCB-136		20.97	2680	1.5			50
PCB-145		21.11	16.9	1.6		J	50
PCB-148		21.85	<14	2.0		J,R	14
PCB-135/151		22.20	4520	2.0			50
PCB-154		22.30	<140	1.7		R	140
PCB-144		22.49	696	2.0			50
PCB-147/149		22.69	10700	3.2			50
PCB-134/143		22.81	903	3.7			50
PCB-139/140		23.00	359	3.2			50
PCB-131		23.12	247	3.8			50
PCB-142		23.22	<5.0	3.6		J,R	5.0
PCB-132		NotFnd	<3.7	3.7		U	50
PCB-133		23.56	159	3.4			50
PCB-165		23.74	13.1	2.8		J	50
PCB-146		23.90	1420	2.9			50
PCB-161		NotFnd	<2.6	2.6		U	50
PCB-153/168		24.23	8500	2.7			50
PCB-141		24.35	1990	3.2			50
PCB-130		24.57	681	3.6			50
PCB-137/164		24.74	1260	2.8		M	50
PCB-129/138/163		24.90	10100	3.0			50
PCB-160		NotFnd	<2.5	2.5		U	50
PCB-158		25.10	1020	2.2			50
PCB-128/166		25.58	1560	2.8			50
PCB-159		26.04	<32	2.4		J,R	32
PCB-162		26.19	33.7	2.6		J	50
PCB-167	0.00003	26.43	347	2.4			50
PCB-156/157	0.00003	27.04	1170	3.4			100
PCB-169	0.03	28.72	<11	2.7		J,R	11
PCB-188		23.54	<14	2.0		J,R	14
PCB-179		23.73	685	1.8			50
PCB-184		24.00	5.11	1.8		J	50
PCB-176		24.19	188	1.8			50
PCB-186		NotFnd	<1.8	1.8		U	50
PCB-178		25.10	271	2.3			50
PCB-175		25.44	57.7	2.2			50
PCB-187		25.57	1740	2.1			50
PCB-182		25.68	12.8	2.1		J	50
PCB-183		25.88	756	2.2		M	50
PCB-185		25.97	95.2	2.4		M	50
PCB-174		26.03	904	2.2		M	50
PCB-177		26.27	489	2.3			50
PCB-181		26.46	15.9	2.4		J	50
PCB-171/173		26.60	269	2.4			50
PCB-172		27.39	162	2.3			50



ALS Life Sciences

Sample Analysis Report

**Sample Name** SITE 5 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-5  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
 E. Sabljic  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B10  
 Run Date 11-Aug-20 16:52  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
PCB-192		NotFnd	<2.0	2.0		U	50
PCB-180/193		27.73	2160	2.0			50
PCB-191		27.91	<33	1.9	J,R	33	50
PCB-170		28.41	783	2.5			50
PCB-190		28.69	150	1.8		M	50
PCB-189	0.00003	30.02	<28	2.6	J,R	28	50
PCB-202		26.31	371	1.2			50
PCB-201		26.78	157	1.1			50
PCB-204		NotFnd	<1.2	1.2		U	50
PCB-197		27.25	<25	1.2	J,R	25	50
PCB-200		27.33	101	1.2			50
PCB-198/199		28.75	883	1.6			50
PCB-196		29.07	329	1.6			50
PCB-203		29.18	572	1.5			50
PCB-195		29.90	141	1.9			50
PCB-194		31.13	451	1.8			50
PCB-205		31.42	18.6	1.7	J		50
PCB-208		29.74	141	2.7			50
PCB-207		30.22	61.1	2.9			50
PCB-206		32.50	379	3.6			50
PCB-209		33.64	127	2.1			50

Extraction Standards	pg	Time	% Rec	Limits	
13C12-PCB-001	4000	8.92	68	5-145	M
13C12-PCB-003	4000	10.59	81	5-145	
13C12-PCB-004	4000	10.75	68	5-145	
13C12-PCB-015	4000	14.31	79	5-145	
13C12-PCB-019	4000	12.67	58	5-145	
13C12-PCB-037	4000	18.22	70	5-145	
13C12-PCB-054	4000	14.48	62	5-145	
13C12-PCB-081	4000	21.80	67	10-145	
13C12-PCB-077	4000	22.10	69	10-145	
13C12-PCB-104	4000	17.52	69	10-145	
13C12-PCB-123	4000	23.10	68	10-145	
13C12-PCB-118	4000	23.27	71	10-145	
13C12-PCB-114	4000	23.58	67	10-145	
13C12-PCB-105	4000	23.91	65	10-145	
13C12-PCB-126	4000	25.51	65	10-145	
13C12-PCB-155	4000	20.52	47	10-145	
13C12-PCB-167	4000	26.42	95	10-145	
13C12-PCB-156/157	8000	27.04	86	10-145	
13C12-PCB-169	4000	28.71	97	10-145	R
13C12-PCB-188	4000	23.53	85	10-145	
13C12-PCB-189	4000	30.00	90	10-145	
13C12-PCB-202	4000	26.29	79	10-145	
13C12-PCB-205	4000	31.40	89	10-145	
13C12-PCB-208	4000	29.74	79	10-145	
13C12-PCB-206	4000	32.48	100	10-145	
13C12-PCB-209	4000	33.63	48	10-145	

Field Spike Standards				
13C12-PCB-031	24000	15.83	111	70-130
13C12-PCB-095	24000	19.12	115	70-130
13C12-PCB-153	24000	24.22	113	70-130

Cleanup Standards				
13C12-PCB-028	4000	16.00	61	5-145
13C12-PCB-111	4000	22.05	82	10-145
13C12-PCB-178	4000	25.09	81	10-145

# ALS Life Sciences

## Sample Analysis Report

**Sample Name** SITE 5 - COMPOSITE 1 (JULY)  
 ALS Sample ID L2479138-5  
 Analysis Method EPA 1668C  
 Analysis Type Sample  
 Sample Matrix PUF

Sampling Date n/a  
 Extraction Date 30-Jul-20  
 Sample Size 1 Sample  
 Percent Moisture n/a  
 Split Ratio 2

Approved:  
*E. Sabljic*  
 --e-signature--  
 12-Aug-2020

**Run Information** Run 1  
 Filename 5-200811B10  
 Run Date 11-Aug-20 16:52  
 Final Volume 25 ul  
 Dilution Factor 1  
 Analysis Units pg  
 Instrument - Column HRMS-5 SPBCTYL251239-05

Target Analytes	TEF (WHO 2005)	Ret. Time	Conc. pg	EDL pg	Flags	EMPC pg	LQL
<b>Homologue Group Totals</b>							
Total MonoCB			268000	21	J	200	
Total DiCB			2480000	8.8	J	400	
Total TriCB			3780000	4.8	J	400	
Total TetraCB			1300000	1.9	J	800	
Total PentaCB			224000	1.8	J	800	
Total HexaCB			48700	1.5	J	800	
Total HeptaCB			8820	1.8	J	400	
Total OctaCB			3050	1.1	J	400	
Total NonaCB			581	2.7	J	200	
DecaCB			127	2.1	J	200	
Total PCB			8110000		J	1600	

**Toxic Equivalency - (WHO 2005)**

Lower Bound PCB TEQ	1.18
Mid Point PCB TEQ	9.71
Upper Bound PCB TEQ	9.71

EDL Indicates the Estimated Detection Limit, based on the measured background noise for this target in this sample.  
 TEF Indicates the Toxic Equivalency Factor TEQ Indicates the Toxic Equivalency  
 LQL Lower Quantification Limit, based on the lowest calibration level corrected for sample size, splits and dilutions.  
 M Indicates that a peak has been manually integrated.  
 U Indicates that this compound was not detected above the EDL.  
 J Indicates that the analyte was positively identified. The associated numerical result is an estimate.  
 R Indicates that the ion abundance ratio for this analyte did not meet the control limit. The reported value represents an estimated concentration.  
 EMPC Estimated Maximum Possible Concentration - elevated detection limit due to interference or positive id criterion failure

# **SVOC DATA PACKAGE**

## **SECTION 3: METHOD SUMMARY**

**PCB METHOD SUMMARY  
Method 1668**

**Introduction:**

This summary is to provide ALSE Burlington PCB method details in order to provide persons reviewing or validating this data package sufficient information to re-construct the sample calculation, data verification and review. It incorporates the analysis of PCBs via the following reference methods:

US EPA Office of Water, Method 1668A  
US EPA Office of Water, Method 1668C

Any deviations to what is listed herein would be listed in the project narrative.

To avoid the confusion and conflicting nomenclature within the methods, we have defined the labeled standards in terms relating to the time of addition to the sample or extract. Therefore;

The Field or Sampling Standards are added prior to field sampling  
The Extraction Standards are added prior to extraction  
The Clean-up Standards are added prior to extract clean-up  
The Injection Standards are added prior to extract injection.

**Calibration Standard Levels:**

Six levels of standard are available for calibration as listed in Table 1. The low point (the CS0) is below method requirements and therefore is optional.

**Table 1. Concentration of CB congeners in calibration and calibration verification standards**

Solution concentration (ng/mL)

CB congener	IUPAC <sup>1</sup>	CS-0.2 (Hi sens)2	CS-1	CS-2	CS-3 (VER)	CS-4	CS-5
<b>Native Toxics/LOC</b>							
2-MoCB	1	0.2	1	5	50	400	2000
4-MoCB	3	0.2	1	5	50	400	2000
2,2'-DiCB	4	0.2	1	5	50	400	2000
4,4'-DiCB	15	0.2	1	5	50	400	2000
2,2',6'-TriCB	19	0.2	1	5	50	400	2000
3,4,4'-TriCB	37	0.2	1	5	50	400	2000
2,2',6,6'-TeCB	54	0.2	1	5	50	400	2000
3,3',4,4'-TeCB	77	0.2	1	5	50	400	2000
3,4,4',5'-TeCB	81	0.2	1	5	50	400	2000
2,2',4,6,6'-PeCB	104	0.2	1	5	50	400	2000
2,3,3',4,4'-PeCB	105	0.2	1	5	50	400	2000
2,3,4,4',5'-PeCB	114	0.2	1	5	50	400	2000
2,3',4,4',5'-PeCB	118	0.2	1	5	50	400	2000
2',3,4,4',5'-PeCB	123	0.2	1	5	50	400	2000
3,3',4,4',5'-PeCB	126	0.2	1	5	50	400	2000
2,2',4,4',6,6'-HxCB	155	0.2	1	5	50	400	2000
2,3,3',4,4',5'-HxCB	156	0.2	1	5	50	400	2000
2,3,3',4,4',5'-HxCB	157	0.2	1	5	50	400	2000
2,3',4,4',5,5'-HxCB	167	0.2	1	5	50	400	2000
3,3',4,4',5,5'-HxCB	169	0.2	1	5	50	400	2000
2,2',3,4',5,6,6'-HpCB	188	0.2	1	5	50	400	2000
2,3,3',4,4',5,5'-HpCB	189	0.2	1	5	50	400	2000
2,2',3,3',5,5',6,6'-OxCB	202	0.2	1	5	50	400	2000
2,3,3',4,4',5,5',6'-OxCB	205	0.2	1	5	50	400	2000
2,2',3,3',4,4',5,5',6'-NoCB	206	0.2	1	5	50	400	2000
2,2',3,3',4,4',5,5',6,6'-NoCB	208	0.2	1	5	50	400	2000
DeCB 209	209	0.2	1	5	50	400	2000
<b>Labeled Toxics/LOC/window-defining</b>							
13C12-2-MoCB	1L	100	100	100	100	100	100
13C12-4-MoCB	3L	100	100	100	100	100	100
13C12-2,2'-DiCB	4L	100	100	100	100	100	100
13C12-4,4'-DiCB	15L	100	100	100	100	100	100
13C12-2,2',6'-TriCB	19L	100	100	100	100	100	100
13C12-3,4,4'-TriCB	37L	100	100	100	100	100	100
13C12-2,2',6,6'-TeCB	54L	100	100	100	100	100	100
13C12-3,3',4,4'-TeCB	77L	100	100	100	100	100	100
13C12-3,4,4',5'-TeCB	81L	100	100	100	100	100	100
13C12-2,2',4,6,6'-PeCB	104L	100	100	100	100	100	100
13C12-2,3,3',4,4'-PeCB	105L	100	100	100	100	100	100
13C12-2,3,4,4',5'-PeCB	114L	100	100	100	100	100	100
13C12-2,3',4,4',5'-PeCB	118L	100	100	100	100	100	100
13C12-2',3,4,4',5'-PeCB	123L	100	100	100	100	100	100
13C12-3,3',4,4',5'-PeCB	126L	100	100	100	100	100	100
13C12-2,2',4,4',6,6'-HxCB	155L	100	100	100	100	100	100
13C12-2,3,3',4,4',5'-HxCB	156L	100	100	100	100	100	100
13C12-2,3,3',4,4',5'-HxCB	157L	100	100	100	100	100	100
13C12-2,3',4,4',5,5'-HxCB	167L	100	100	100	100	100	100
13C12-3,3',4,4',5,5'-HxCB	169L	100	100	100	100	100	100
13C12-2,2',3,4',5,6,6'-HpCB	188L	100	100	100	100	100	100
13C12-2,3,3',4,4',5,5'-HpCB	189L	100	100	100	100	100	100
13C12-2,2',3,3',5,5',6,6'-OxCB	202L	100	100	100	100	100	100
13C12-2,3,3',4,4',5,5',6'-OxCB	205L	100	100	100	100	100	100
13C12-2,2',3,3',4,4',5,5',6'-NoCB	206L	100	100	100	100	100	100
13C12-2,2',3,3',4,4',5,5',6,6'-NoCB	208L	100	100	100	100	100	100
13C12-DeCB 209L	209L	100	100	100	100	100	100
<b>Labeled clean-up</b>							
13C12-2,4,4'-TriCB	28L	100	100	100	100	100	100
13C12-2,3,3',5,5'-PeCB	111L	100	100	100	100	100	100
13C12-2,2',3,3',5,5',6'-HpCB	178L	100	100	100	100	100	100
<b>Labeled injection internal</b>							
13C12-2,5'-DiCB	9L	100	100	100	100	100	100
13C12-2,2',5,5'-TeCB	52L	100	100	100	100	100	100
13C12-2,2',4',5,5'-PeCB	101L	100	100	100	100	100	100
13C12-2,2',3',4,4',5'-HxCB	138L	100	100	100	100	100	100
13C12-2,2',3,3',4,4',5,5'-OxCB	194L	100	100	100	100	100	100

**Method Control Limits for 1668A**

The initial and continuing calibration control limits for both methods are presented in Table 2 below. For the initial calibration CS1 and for each calibration verification CS3, the signal to noise ratio for each quantification ion for labelled and non-labelled analytes must be greater than or equal to 10:1

**Table 2A. QC acceptance criteria for chlorinated biphenyls in VER, IPR, OPR, and samples <sup>1</sup>**

Congener	IUPAC Number <sup>2</sup>	Test conc (ng/mL)	VER (%)	IPR		OPR (%)	Labelled compound recovery in samples (%)
				RSD (%)	X (%)		
2-MoCB	1	50	70-130	40	60-140	50-150	
4-MoCB	3	50	70-130	40	60-140	50-150	
2,2'-DiCB	4	50	70-130	40	60-140	50-150	
4,4'-DiCB	15	50	70-130	40	60-140	50-150	
2,2',6,6'-TeCB	19	50	70-130	40	60-140	50-150	
3,4,4'-TrCB	37	50	70-130	40	60-140	50-150	
2,2',6,6'-TeCB	54	50	70-130	40	60-140	50-150	
3,3',4,4'-TeCB	77	50	70-130	40	60-140	50-150	
3,4,4',5'-TeCB	81	50	70-130	40	60-140	50-150	
2,2',4,6,6'-PeCB	104	50	70-130	40	60-140	50-150	
2,3,3',4,4'-PeCB	105	50	70-130	40	60-140	50-150	
2,3,4,4',5'-PeCB	114	50	70-130	40	60-140	50-150	
2,3',4,4',5'-PeCB	118	50	70-130	40	60-140	50-150	
2',3,4,4',5'-PeCB	123	50	70-130	40	60-140	50-150	
3,3',4,4',5'-PeCB	126	50	70-130	40	60-140	50-150	
2,2',4,4',6,6'-HxCB	155	50	70-130	40	60-140	50-150	
2,3,3',4,4',5'-HxCB <sup>3</sup>	156	50	70-130	40	60-140	50-150	
2,3,3',4,4',5'-HxCB <sup>3</sup>	157	50	70-130	40	60-140	50-150	
2,3',4,4',5',5'-HxCB	167	50	70-130	40	60-140	50-150	
3,3',4,4',5',5'-HxCB	169	50	70-130	40	60-140	50-150	
2,2',3,4',5,6,6'-HpCB	188	50	70-130	40	60-140	50-150	
2,3,3',4,4',5,5'-HpCB	189	50	70-130	40	60-140	50-150	
2,2',3,3',5,5',6,6'-OoCB	202	50	70-130	40	60-140	50-150	
2,3,3',4,4',5,5',6-OoCB	205	50	70-130	40	60-140	50-150	
2,2',3,3',4,4',5,5',6-NoCB	206	50	70-130	40	60-140	50-150	
2,2',3,3',4,5,5',6,6'-NoCB	208	50	70-130	40	60-140	50-150	
DeCB	209	50	70-130	40	60-140	50-150	
13C12-2-MoCB	1L	100	50-150	50	35-135	30-140	25-150
13C12-4-MoCB	3L	100	50-150	50	35-135	30-140	25-150
13C12-2,2'-DiCB	4L	100	50-150	50	35-135	30-140	25-150
13C12-4,4'-DiCB	15L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',6-TrCB	19L	100	50-150	50	35-135	30-140	25-150
13C12-3,4,4'-TrCB	37L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',6,6'-TeCB	54L	100	50-150	50	35-135	30-140	25-150
13C12-3,3',4,4'-TCB	77L	100	50-150	50	35-135	30-140	25-150
13C12-3,4,4',5'-TeCB	81L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',4,6,6'-PeCB	104L	100	50-150	50	35-135	30-140	25-150
13C12-2,3,3',4,4'-PeCB	105L	100	50-150	50	35-135	30-140	25-150
13C12-2,3,4,4',5'-PeCB	114L	100	50-150	50	35-135	30-140	25-150
13C12-2,3',4,4',5'-PeCB	118L	100	50-150	50	35-135	30-140	25-150
13C12-2',3,4,4',5'-PeCB	123L	100	50-150	50	35-135	30-140	25-150
13C12-3,3',4,4',5'-PeCB	126L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',4,4',6,6'-HxCB	155L	100	50-150	50	35-135	30-140	25-150
13C12-2,3,3',4,4',5'-HxCB <sup>3</sup>	156L	100	50-150	50	35-135	30-140	25-150
13C12-2,3,3',4,4',5'-HxCB <sup>3</sup>	157L	100	50-150	50	35-135	30-140	25-150
13C12-2,3',4,4',5',5'-HxCB	167L	100	50-150	50	35-135	30-140	25-150
13C12-3,3',4,4',5',5'-HxCB	169L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',3,4',5,6,6'-HpCB	188L	100	50-150	50	35-135	30-140	25-150
13C12-2',3,3',4,4',5,5'-HpCB	189L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',3,3',5,5',6,6'-OoCB	202L	100	50-150	50	35-135	30-140	25-150
13C12-2,3,3',4,4',5,5',6-OoCB	205L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',3,3',4,4',5,5',6-NoCB	206L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',3,3',4,5,5',6,6'-NoCB	208L	100	50-150	50	35-135	30-140	25-150
13C12-2,2',3,3',4,4',5,5',6,6'-DeCB	209L	100	50-150	50	35-135	30-140	25-150
<b>Cleanup standard</b>							
13C12-2,4,4'-TrCB	28L	100	60-130	45	45-120	40-125	30-135
13C12-2,3,3',5,5'-PeCB	111L	100	60-130	45	45-120	40-125	30-135
13C12-2,2',3,3',5,5',6'-HpCB	178L	100	60-130	45	45-120	40-125	30-135

1. QC acceptance criteria for IPR, OPR, and samples based on a 20 ul extract final volume

2. Suffix "L" indicates labelled compound.

3. PCBs 156 and 157 are tested as the sum of two concentrations

**Method Control Limits for 1668C**

The initial and continuing calibration control limits for both methods are presented in Table 2 below. For the initial calibration CS1 and for each calibration verification CS3, the signal to noise ratio for each quantification ion for labelled and non-labelled analytes must be greater than or equal to 10:1

**Table 2A. QC acceptance criteria for chlorinated biphenyls in VER, IPR, OPR, and samples <sup>1</sup>**

Congener	IUPAC Number <sup>2</sup>	Test conc (ng/mL)	VER (%)	IPR		OPR (%)	Labelled compound recovery in samples (%)
				RSD (%)	X (%)		
2-MoCB	1	50	75 - 125	25	70 - 130	60 - 135	
4-MoCB	3	50	75 - 125	25	70 - 130	60 - 135	
2,2'-DiCB	4	50	75 - 125	25	70 - 130	60 - 135	
4,4'-DiCB	15	50	75 - 125	25	70 - 130	60 - 135	
2,2',6-TrCB	19	50	75 - 125	25	70 - 130	60 - 135	
3,4,4'-TrCB	37	50	75 - 125	25	70 - 130	60 - 135	
2,2',6,6'-TeCB	54	50	75 - 125	25	70 - 130	60 - 135	
3,3',4,4'-TeCB	77	50	75 - 125	25	70 - 130	60 - 135	
3,4,4',5'-TeCB	81	50	75 - 125	25	70 - 130	60 - 135	
2,2',4,6,6'-PeCB	104	50	75 - 125	25	70 - 130	60 - 135	
2,3,3',4,4'-PeCB	105	50	75 - 125	25	70 - 130	60 - 135	
2,3,4,4',5'-PeCB	114	50	75 - 125	25	70 - 130	60 - 135	
2,3',4,4',5'-PeCB	118	50	75 - 125	25	70 - 130	60 - 135	
2',3,4,4',5'-PeCB	123	50	75 - 125	25	70 - 130	60 - 135	
3,3',4,4',5'-PeCB	126	50	75 - 125	25	70 - 130	60 - 135	
2,2',4,4',6,6'-HxCB	155	50	75 - 125	25	70 - 130	60 - 135	
2,3,3',4,4',5'-HxCB <sup>3</sup>	156	50	75 - 125	25	70 - 130	60 - 135	
2,3,3',4,4',5'-HxCB <sup>3</sup>	157	50	75 - 125	25	70 - 130	60 - 135	
2,3',4,4',5,5'-HxCB	167	50	75 - 125	25	70 - 130	60 - 135	
3,3',4,4',5,5'-HxCB	169	50	75 - 125	25	70 - 130	60 - 135	
2,2',3,4',5,6,6'-HpCB	188	50	75 - 125	25	70 - 130	60 - 135	
2,3,3',4,4',5,5'-HpCB	189	50	75 - 125	25	70 - 130	60 - 135	
2,2',3,3',5,5',6,6'-OcCB	202	50	75 - 125	25	70 - 130	60 - 135	
2,3,3',4,4',5,5',6,6'-OcCB	205	50	75 - 125	25	70 - 130	60 - 135	
2,2',3,3',4,4',5,5',6,6'-NoCB	206	50	75 - 125	25	70 - 130	60 - 135	
2,2',3,3',4,5,5',6,6'-NoCB	208	50	75 - 125	25	70 - 130	60 - 135	
DeCB	209	50	75 - 125	25	70 - 130	60 - 135	
13C12-2-MoCB	1L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-4-MoCB	3L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-2,2'-DiCB	4L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-4,4'-DiCB	15L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-2,2',6-TrCB	19L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-3,4,4'-TrCB	37L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-2,2',6,6'-TeCB	54L	100	50 - 145	70	20 - 135	5 - 145	5 - 145
13C12-3,3',4,4'-TeCB	77L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-3,4,4',5'-TeCB	81L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',4,6,6'-PeCB	104L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3,3',4,4'-PeCB	105L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3,4,4',5'-PeCB	114L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3',4,4',5'-PeCB	118L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2',3,4,4',5'-PeCB	123L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-3,3',4,4',5'-PeCB	126L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',4,4',6,6'-HxCB	155L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3,3',4,4',5'-HxCB <sup>3</sup>	156L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3,3',4,4',5'-HxCB <sup>3</sup>	157L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3',4,4',5,5'-HxCB	167L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-3,3',4,4',5,5'-HxCB	169L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,4',5,6,6'-HpCB	188L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2',3,3',4,4',5,5'-HpCB	189L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,3',5,5',6,6'-OcCB	202L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,3,3',4,4',5,5',6,6'-OcCB	205L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,3',4,4',5,5',6,6'-NoCB	206L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,3',4,5,5',6,6'-NoCB	208L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,3',4,4',5,5',6,6'-DeCB	209L	100	50 - 145	50	45 - 135	10 - 145	10 - 145
<b>Cleanup standards</b>							
13C12-2,4,4'-TrCB	28L	100	65 - 135	70	20 - 135	5 - 145	5 - 145
13C12-2,3,3',5,5'-PeCB	111L	100	75 - 125	50	45 - 135	10 - 145	10 - 145
13C12-2,2',3,3',5,5',6,6'-HpCB	178L	100	75 - 125	50	45 - 135	10 - 145	10 - 145

1. QC acceptance criteria for IPR, OPR, and samples based on a 20-µL extract final volume

2. Suffix "L" indicates labeled compound.

3. CBs 156/157 and 156L/157L are tested as the sum of the two congeners

**Reporting Limits:**

Unless indicated in the otherwise, the PCB results are reported down to 2.5:1 signal to noise for each isomer grouping for each extract injection. This is consistent to SW846 8290 defined protocols (i.e. EDL or Estimated Detection Limit) and is commonly applied throughout the industry to any or all the HRMS performance based methods applicable to this method summary.

**Method Blank:**

The Method Blank must be below the EMLs published in the required method, 1668A or 1668C.

**MS/MSD:**

The % relative difference between the MS and MSD spike recoveries should be less than or equal to 20%.

**Instrument/Run Performance Criteria:**

- 1 Elution windows must be defined by a 'Window Performance Mix' at the beginning of each 12-hour run sequence
- 2 GC performance criteria of 40% maximum valley between PCB-34/PCB-23, and PCB-187/PCB-182 (Octyl Column).
- 3 At the beginning of and just following the end of each 12 hour run sequence, the instrument must be checked to demonstrate a resolution of 10,000 within each quantification window (8,000 minimum across the window).
- 4 The relative retention times (RRT) of the compounds in the daily 209 congener mix must fall into the ranges presented in Table 4.
- 5 The RT in the daily CS3 verification standards must be within 15 seconds of the CS3 in the initial calibration run.
- 6 The maximum time between scans within a descriptor is 1 second.
- 7 Lock mass deviations to the average response must be less than or equal 20%.

**Laboratory Duplicates:**

The % relative difference between duplicates should be less than or equal to 25% but only where the response is greater than the low calibration standard.

**Analyte Identification Criteria:**

- 1 Ion ratio must be within 15% of theoretical or within 10% of the most recent CS3.
- 2 The retention time (RT) of the peak maxima for each pair of quantification ions must be no more than 2 seconds (i.e. 2 scans) difference.
- 3 The retention time (RT) of the peak maxima of all native analytes for which a labeled analogue is used must be within -1 to +3 seconds of the RT of corresponding <sup>13</sup>C<sub>12</sub>-labelled isomer of that injection run.
- 4 For those native analytes without a corresponding labelled isomer, the relative retention time (RRT) must be within 0.005 of the relative retention time observed in the daily 209 congener run.

## **DEVIATIONS AND CLARIFICATIONS FROM THE PRIMARY REFERENCES**

The reference methods applicable to this document are:

US EPA Office of Water, Method 1668A  
US EPA Office of Water, Method 1668C

These methods are referred-to herein as Method 1668

The following changes and clarifications apply:

1) As stated in method 1668, alternate columns and column systems are allowable changes to the method. In the context of the method, it is clear that Table 2 of this method (including retention times, relative retention times, and quantitation references) is specific to the Octyl GC column if used exactly as suggested in the method.

As a performance based method, changes in the internal standard references could be considered an improvement even when using the SPB-Octyl column. However when using an alternate column system (which may or may not include use of the Octyl column), optimization of the quantitation references can be an important part of optimizing the method. Consider that the MS acquisition method must be divided into mass descriptors or 'functions', each one defining the masses that are monitored during that time range. When monitoring for all 209 PCB congeners, there are large chromatographic regions where elution of target compounds is nearly continuous with little separation between peaks. In addition, there is a slight acquisition "gap" that occurs at each function change (for Water's instruments 1-2 seconds, for Thermo instruments 6-8 seconds), and also the likelihood of slight retention time shifts from one run to another. Consequently, choosing the exact location of each function boundary can be challenging. For a 1668 method, there are typically between 5 and 8 functions dependent upon the column, the GC conditions, the instrument and the choice of the function boundaries by the laboratory. Each function can have 1 to as many as 4 chlorination levels. When optimizing the quantification model in the case where RT and elution patterns have changed – even slightly - the best choice of internal standard references can and should change dependent upon target retention times and placement of function boundaries. For example, the best quantification is achieved using an internal standard reference that elutes at close to the same retention time. Another consideration is that it is best practice where possible (i.e. generally allows for more accurate target determinations) to have the internal standard reference within the same function rather than quantify a target relative to an internal standard from an outside function.

The quantification references used in this analysis are detailed in Table 3.

2) The absolute retention time criterion for decachlorobiphenyl of 55 minutes is not generally followed and is an unnecessary restriction since method 1668 was developed without the use of electronic pressure control on the GC injection system, and there are GC performance criteria that can be met without this restriction. As a result, the RRT criteria of 1668 may not be applicable.

3) Although not clearly stated in method 1668, we maintain that each and every individual clean-up procedure is, by definition, performance-based and optional. There is not an expectation within the industry to follow exactly the descriptions of clean-ups in reference methods. Adaptations which meet or exceed the required performance criteria are therefore acceptable within the scope of each reference method. The reference method descriptions are intended as guidelines or templates available to help the laboratory to define effective in-house clean-up methods. The objective within the laboratory is to provide quality clean extracts to the instrument for analysis. Each individual clean-up is part of the laboratory's available tools in order to achieve this objective.

4) There are differences within the individual reference methods as to the precise spiking protocols for adding extraction standards and native spikes (for LCS, MS and MSD). To ensure consistency within the laboratory between HRMS methods, the PCB preparative method requires solid samples (including stack and ambient sorbants/filters) to be spiked in the soxhlet extractor from a nonane solution and waters are spiked before filtering from an acetone solution. .

5) Sub-sampling of solids and pre-extraction processing is done in a manner that minimizes potential for cross-contamination. These processes are designed around SW846 protocols rather than 1668 protocols. Solids are sub-sampled directly from the bottle as submitted to the laboratory wherever practical. If the sample is submitted such that homogenization in the bottle is impractical (eg. the bottle is too full or lumps cannot be broken down), then transferring the sample to a tray or another bottle maybe in order.

6) The concentration of labelled and native spiking solutions are not consistent with those listed in all of the reference methods. These concentrations are prepared at levels convenient and expedient for accurate laboratory processing.

7) Extraction and injection standard concentrations differ from 1668, in order to aid precise measurement and standardise volumes with other reference methods such as PCDD/F by 1613B.

8) Method 1668C recognizes the option to use the 209 congener mix as the daily calibration verification solution rather than the CS3. This document acknowledges and allows either calibration option for both 1668A and 1668C analytical approaches.

9) For method 1668C analysis, the OPR labelled recovery limits are the same as for the sample recovery limits in method 1668C. This represents a broader acceptance range for the OPR than is currently listed in method 1668C. However, the control of the native (i.e. non-labelled) recovery limits is the key item to demonstrate/monitor in the OPR. Furthermore, in the OPR performance, it is important to demonstrate these native controls are maintained within the same range of labelled recoveries as is observed in the sample data.