QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Matrix: Solids
Analytical Group: PCBs – Homologs and Congeners; Method 1668A; Analytical Perspectives, Wilmington, NC
Concentration Level: Low

Analyte	CAS Number	PAL (pg/sample)[a]	Project QL Goal (pg/sample)	Analytical Method[b]		Achievable Laboratory Limits[c]	
				Method Detection Limits (MDLs) (pg/g)	Method QLs (pg/g)	EDLs (pg/sample)	QLs (pg/sample)
Monochlorobiphenyl	27323-18-8	25	25	NA	NA	NA	25
Dichlorobiphenyl	25512-42-9	50	50	NA	NA	NA	50
Trichlorobiphenyl	25323-68-6	25	25	NA	NA	NA	25
Tetrachlorobiphenyl	26914-33-0	25	25	NA	NA	NA	25
Pentachlorobiphenyl	25429-29-2	25	25	NA	NA	NA	25
Hexachlorobiphenyl	26601-64-9	25	25	NA	NA	NA	25
Heptachlorobiphenyl	28655-71-2	25	25	NA	NA	NA	25
Octachlorobiphenyl	55722-26-4	25	25	NA	NA	NA	25
Nonachlorobiphenyl	53742-07-7	25	25	NA	NA	NA	25
Decachlorobiphenyl	2051-24-3	25	25	NA	NA	NA	25
PCB 1	2051-60-7	10	10	80	200	8.0	10
PCB 2	2051-61-8	10	10	4.0	10	9.0	10
PCB 3	2051-62-9	10	10	90	200	0.95	10
PCB 4	13029-08-8	50	50	170	500	11	50
PCB 5	16605-91-7	50	50	10	50	13	50
PCB 6	25569-80-6	10	10	10	50	9.0	10
PCB 7	33284-50-3	50	50	20	50	12	50
PCB 8	34883-43-7	10	10	120	500	9.6	10
PCB 9	34883-39-1	50	50	20	50	10	50
PCB 10	33146-45-1	50	50	20	50	13	50
PCB 11	2050-67-1	40	40	100	200	19	40

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PCB 12+ PCB 13	2974-92-7; 2974-90-5	50	50	30	100	11	50
PCB 14	34883-41-5	50	50	30	100	12	50
PCB 15	2050-68-2	10	10	180	500	0.63	10
PCB 16	38444-78-9	10	10	40	100	1.9	10
PCB 17	37680-66-3	10	10	90	200	3.3	10
PCB 18 + PCB 30	37680-65-2; 35693-92-6	50	50	170	500	12	50
PCB 19	38444-73-4	10	10	40	100	2.8	10
PCB 20 + PCB 28	38444-84-7; 7012-37-5	80	80	190	500	24	80
PCB 21 + PCB 33	55702-46-0; 38444-86-9	50	50	50	200	11	50
PCB 22	38444-85-8	10	10	90	200	4.6	10
PCB 23	55720-44-0	10	10	50	200	3.7	10
PCB 24	55702-45-9; 38444-76-7	10	10	50	200	2.8	10
PCB 25	55712-37-3	10	10	50	200	1.3	10
PCB 26 + PCB 29	38444-81-4; 15862-07-4	10	10	80	200	0.54	10
PCB 27	38444-76-7	10	10	60	200	2.1	10
PCB 31	16606-02-3	50	50	150	500	16	50
PCB 32	38444-77-8	10	10	80	200	3.5	10
PCB 34	37680-68-5	10	10	70	200	3.3	10
PCB 35	37680-69-6	10	10	80	200	2.7	10
PCB 36	38444-87-0	10	10	80	200	3.0	10
PCB 37	38444-90-5	10	10	130	500	3.6	10
PCB 38	53555-66-1	10	10	80	200	3.6	10
PCB 39	38444-88-1	10	10	90	200	3.0	10
PCB 40 + PCB 71	38444-93-8; 41464-46-4	10	10	120	500	0.57	10

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PCB 41	52663-59-9	10	10	120	500	3.2	10
PCB 42	36559-22-5	10	10	60	200	1.6	10
PCB 43	70362-46-8	10	10	90	200	4.2	10
PCB 44 + PCB 47 + PCB 65	41464-39-5; 2437-79-8; 33284-54-7	10	10	190	500	9.9	10
PCB 45	70362-45-7	10	10	50	200	2.8	10
PCB 46	41464-47-5	10	10	100	200	3.7	10
PCB 48	70362-47-9	10	10	80	200	1.5	10
PCB 49 + PCB 69	41464-40-8; 60233-24-1	10	10	110	500	4.0	10
PCB 50 + PCB 53	62796-65-0; 41464-41-9	10	10	60	200	2.0	10
PCB 51	68194-04-7	10	10	60	200	3.2	10
PCB 52	35693-99-3	50	50	190	500	13	50
PCB 54	15968-05-5	10	10	120	500	2.8	10
PCB 55	74338-24-2	10	10	120	500	3.2	10
PCB 56	41464-43-1	10	10	100	200	0.18	10
PCB 57	70424-67-8	10	10	120	500	3.5	10
PCB 58	41464-49-7	10	10	130	500	3.1	10
PCB 59 + PCB 62 + PCB 75	74472-33-6; 54230-22-7; 32598-12-2	10	10	60	200	2.3	10
PCB 60	33025-41-1	10	10	130	500	1.5	10
PCB 61 + PCB 70 + PCB 74 + PCB 76	33284-53-6; 32598-11-1; 32690-93-0; 70362-48-0	50	50	170	500	11	50
PCB 63	74472-34-7	100	100	140	500	31	100
PCB 64	52663-58-8	10	10	70	200	1.6	10
PCB 66	32598-10-0	10	10	160	500	3.6	10
PCB 67	73575-53-8	10	10	150	500	2.8	10

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PCB 68	73575-52-7	10	10	150	500	3.2	10
PCB 72	41464-42-0	10	10	160	500	3.1	10
PCB 73	74338-23-1	10	10	170	500	2.9	10
PCB 77	32598-13-3	10	10	170	500	3.0	10
PCB 78	70362-49-1	10	10	170	500	3.3	10
PCB 79	41464-48-6	10	10	170	500	2.8	10
PCB 80	33284-52-5	10	10	180	500	3.2	10
PCB 81	70362-50-4	10	10	180	500	3.7	10
PCB 82	52663-62-4	10	10	130	500	3.7	10
PCB 83	60145-20-2	10	10	220	500	4.1	10
PCB 84	52663-60-2	10	10	120	500	2.1	10
PCB 85 + PCB 116	65510-45-4; 18259-05-7	10	10	100	200	3.0	10
PCB 86 + PCB 87 + PCB 97 + PCB 108 + PCB 119 + PCB 125	55312-69-1; 38380-02-8; 41464-51-1; 70362-41-3; 56558-17-9; 74472-39-2	10	10	270	1000	1.9	10
PCB 88	55215-17-3	100	100	120	500	4.9	100
PCB 89	73575-57-2	10	10	190	500	4.0	10
PCB 90 + PCB 101 + PCB 113	68194-07-0; 37680-73-2; 68194-10-5	10	10	240	1000	5.4	10
PCB 91	68194-05-8	10	10	120	500	2.8	10
PCB 92	52663-61-3	10	10	120	500	3.0	10
PCB 93 + PCB 100	73575-56-1; 39485-83-1	10	10	220	500	3.8	10
PCB 94	73575-55-0	10	10	220	500	4.6	10
PCB 95	38379-99-6	10	10	220	500	5.0	10
PCB 96	73575-54-9	10	10	210	500	2.9	10
PCB 98	60233-25-2	100	100	220	500	3.9	100

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

PCB 99	38380-01-7	10	10	220	500	0.49	10
PCB 102	68194-06-9	10	10	220	500	3.8	10
PCB 103	60145-21-3	10	10	230	500	3.4	10
PCB 104	56558-16-8	10	10	230	500	3.0	10
PCB 105	32598-14-4	10	10	110	20	1.0	10
PCB 106	70424-69-0	10	10	140	500	3.0	10
PCB 107 + PCB 124	70424-68-9; 70424-70-3	10	10	270	1000	3.0	10
PCB 109	74472-35-8	10	10	150	500	2.5	10
PCB 110	38380-03-938-1	10	10	240	1000	4.6	10
PCB 111	39635-32-0	10	10	240	1000	3.2	10
PCB 112	74472-36-9	10	10	250	1000	2.9	10
PCB 114	74472-37-0	10	10	120	500	3.1	10
PCB 115	74472-38-1	10	10	240	1000	2.7	10
PCB 117	68194-11-6	10	10	100	200	3.1	10
PCB 118	31508-00-6	10	10	190	500	3.3	10
PCB 120	68194-12-7	10	10	150	500	2.8	10
PCB 121	56558-18-0	10	10	210	500	3.2	10
PCB 122	76842-07-4	10	10	120	500	3.3	10
PCB 123	65510-44-3	10	10	150	500	3.4	10
PCB 126	57465-28-8	10	10	140	500	3.4	10
PCB 127	39635-33-1	10	10	280	1000	3.2	10
PCB 128 + PCB 166	38380-07-3; 41411-63-6	10	10	120	500	3.3	10
PCB 129 + PCB 138 + PCB 163	55215-18-4; 56030-56-9; 74472-44-9	10	10	210	500	2.7	10
PCB 130	52663-66-8	10	10	140	500	3.8	10
PCB 131	61798-70-7	10	10	120	500	3.4	10
PCB 132	52704-70-8	10	10	120	500	2.4	10

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

PCB 133	35694-04-3	10	10	170	500	3.6	10
PCB 134	52744-13-5	10	10	130	500	3.9	10
PCB 135 + PCB 151	52744-13-5; 52663-63-5	10	10	110	500	2.1	10
PCB 136	38411-22-2	10	10	90	200	2.0	10
PCB 137	35694-06-5	10	10	300	1000	3.5	10
PCB 139 + PCB 140	56030-56-9; 59291-64-4	10	10	200	500	3.4	10
PCB 141	52712-04-6	10	10	90	200	2.6	10
PCB 142	41411-61-4	10	10	310	1000	4.0	10
PCB 143	68194-15-0	10	10	130	500	3.7	10
PCB 144	68194-14-9	10	10	170	500	3.2	10
PCB 145	74472-40-5	10	10	320	1000	2.8	10
PCB 146	51908-16-8	10	10	180	500	2.6	10
PCB 147 + PCB 149	68194-13-8; 38380-04-0	10	10	180	500	1.1	10
PCB 148	74472-41-6	10	10	320	1000	3.6	10
PCB 150	68194-08-1	10	10	330	1000	2.9	10
PCB 152	68194-09-2	80	80	240	1000	2.5	80
PCB 153 + PCB 168	35065-27-1; 59291-65-5	10	10	130	500	3.7	10
PCB 154	60145-22-4	10	10	110	500	2.9	10
PCB 155	33979-03-2	10	10	340	1000	2.7	10
PCB 156 + PCB 157	38380-08-4; 69782-90-7	10	10	130	500	4.1	10
PCB 158	74472-42-7	10	10	100	200	2.2	10
PCB 159	39635-35-3	10	10	350	1000	3.0	10
PCB 160	41411-62-5	10	10	210	500	2.9	10
PCB 161	74472-43-8	10	10	350	1000	2.7	10
PCB 162	39635-34-2	10	10	350	1000	3.3	10
PCB 164	74472-45-0	10	10	140	500	2.3	10

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

PCB 165	74472-46-1	10	10	360	1000	2.8	10
PCB 167	52663-72-6	10	10	110	500	3.3	10
PCB 169	32774-16-6	10	10	160	500	3.9	10
PCB 170	35065-30-6	10	10	160	500	4.0	10
PCB 171 + PCB 173	52663-71-5; 68194-16-1	10	10	370	1000	4.0	10
PCB 172	52663-74-8	10	10	380	1000	4.1	10
PCB 174	38411-25-5	10	10	390	1000	3.3	10
PCB 175	40186-70-7	10	10	390	1000	4.1	10
PCB 176	52663-65-7	10	10	390	1000	2.9	10
PCB 177	52663-70-4	10	10	140	500	3.9	10
PCB 178	52663-67-9	10	10	220	500	3.4	10
PCB 179	52663-64-6	10	10	230	500	2.4	10
PCB 180 + PCB 193	35065-29-3; 69782-91-8	10	10	140	500	0.28	10
PCB 181	74472-47-2	10	10	400	1000	4.2	10
PCB 182	60145-23-5	10	10	400	1000	3.7	10
PCB 183	52663-69-1	10	10	400	1000	3.1	10
PCB 184	74472-48-3	10	10	400	1000	2.8	10
PCB 185	52712-05-7	10	10	400	1000	4.5	10
PCB 186	74472-49-4	10	10	410	1000	2.7	10
PCB 187	52663-68-0	10	10	190	500	2.0	10
PCB 188	74487-85-7	10	10	230	500	2.9	10
PCB 189	39635-31-9	10	10	180	500	3.2	10
PCB 190	41411-64-7	10	10	230	500	3.2	10
PCB 191	74472-50-7	10	10	420	1000	3.3	10
PCB 192	74472-51-8	10	10	420	1000	3.3	10
PCB 194	35694-08-7	10	10	170	500	3.8	10
PCB 195	52663-78-2	10	10	430	1000	4.4	10
PCB 196	42740-50-1	10	10	430	1000	3.6	10

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

PCB 197	33091-17-7	10	10	250	1000	2.6	10
PCB 198 + PCB 199	68194-17-2; 52663-75-9	10	10	200	500	3.6	10
PCB 200	52663-73-7	10	10	250	1000	3.1	10
PCB 201	40186-71-8	10	10	440	1000	2.9	10
PCB 202	2136-99-4	10	10	440	1000	3.3	10
PCB 203	52663-76-0	10	10	440	1000	3.3	10
PCB 204	74472-52-9	10	10	450	1000	3.0	10
PCB 205	74472-53-0	10	10	450	1000	4.0	10
PCB 206	40186-72-9	10	10	450	1000	8.0	10
PCB 207	52663-79-3	10	10	450	1000	5.9	10
PCB 208	52663-77-1	10	10	460	1000	6.9	10
PCB 209	2051-24-3	10	10	150	500	1.7	10

[a] PALs based on QLs derived from the low point of calibration. Note PALs are not risk based for this program.

[b] Analytical MDLs and QLs are those documented in validated methods, modified for a 1 gram (g) sample size. "NA" indicates that MDL and/or QL values were not included in the validated methods.

[c] Achievable EDLs (derived from average MB EDLs) and QLs are limits that an individual laboratory can achieve when performing a specific analytical method and are typically based on whole samples as received. Actual EDLs and QLs will vary based on sample-specific factors. All results between the EDL and QL will be reported as estimated values (J qualifier). Reporting limits (i.e., the numerical values associated with non-detects) for the individual congeners will be based on sample-specific EDLs rather than QLs. Laboratory results will be reported in pg/sample, rather than pg/g. Actual co-eluters may vary from those listed in the analyte column due to changes in instrumental conditions. "NA" indicates that EDLs are not available for the associated compounds.

The volume of water to be sampled is dependent on the mass of suspended sediment at each station, as measured during Routine Event #1 and Routine Event #2 of the SV CWCM program. The volume of water sampled is calculated assuming 1g of solids may be separated assuming the lower end of the SSC from the SV CWCM data, with a buffer of 1g (2g solids total to be removed), rounded up to the nearest 25 L. Refer to Worksheet #37 for details on the data usability assessment with regard to sensitivity and calculations using SSC data and flow volume.

Estimated volumes for each station are provided below. These estimated volume sampled will be confirmed in the field, based on data provided using the LISST. If the data from the LISST indicate that the water column sediment concentration is substantially higher or lower than anticipated, the proposed sampling volume may be modified. The field records will include the proposed sampling volume per the HV CWCM QAPP, LISST measurements, modified proposed sampling volume (including assumptions and calculations, if required based on the LISST data), and the actual sample volume collected.

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Location	SSC [1] (mg/L)	Date SSC Measured	Volume to achieve 2g solid at known SSC[2]	Pumping Time [3]
Above Dundee Dam	2.5	2/20/2012	2,000 mg solid ÷ 2.5 mg SSC / L = 800 L Proposed estimated sampling volume = 800 L	800L ÷ 1.5 L/min = 533 min 533 min ÷ 60 min/hr = 9 hr
RM 10.2	3.1	2/20/2012	2,000 mg solid ÷ 3.1 mg SSC / L = 645 L Proposed estimated sampling volume = 650 L	650L ÷ 1.5 L/min = 433 min 433 min ÷ 60 min/hr = 7.5 hr
RM 4.2 (Tidal 2)	11.9	2/21/2012	2,000 mg solid ÷ 11.9 mg SSC / L = 168 L Proposed estimated sampling volume = 175 L	175L ÷ 1.5 L/min = 117 min 117 min ÷ 60 min/hr = 2 hr
Kill van Kull	5.1	8/17/2011	2,000 mg solid ÷ 5.1 mg SSC / L = 392 L Proposed estimated sampling volume = 400 L	400L ÷ 1.5 L/min = 267 min 267 min ÷ 60 min/hr = 4.5 hr
Newark Bay South	4.9	8/18/2011	2,000 mg solid ÷ 4.9 mg SSC / L = 408 L Proposed estimated sampling volume = 425 L	425L ÷ 1.5 L/min = 283 min 283 ÷ 60 min/hr = 5 hr
Newark Bay Northeast	8.9	2/22/2012	2,000 mg solid ÷ 8.9 mg SSC / L = 224 L Proposed estimated sampling volume = 225 L	225L ÷ 1.5 L/min = 150 min 150 min ÷ 60 min/hr = 2.5 hr

[1] The lowest SSC detected during SV Routine Events #1 and #2.

[2] 2,000 mg solid ÷ mg SSC / L = L to be sampled, rounded up to the nearest 25L.

[3] Pumping time is rounded up to nearest 0.5 hr and assumes maximum flow rate of 1.5 L/min is achieved and maintained for duration of sampling. Time does not include set-up or break-down of equipment on site, and does not include time for filter changes. Actual sampling duration per station will be higher.

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Matrix: Solids
Analytical Group: PCDD/PCDFs; Method 1613B; Analytical Perspectives, Wilmington, NC
Concentration Level: Low

Analyte	CAS Number	PAL (pg/sample)[a]	Project QL Goal (pg/sample)	Analytical Method[b]		Achievable Laboratory Limits[c]	
				MDLs (pg/g)	Method QLs (pg/g)	EDLs (pg/sample)	QLs (pg/sample)
1,2,3,4,6,7,8-HPCDD	35822-46-9	25	25	NA	50	3.4	25
1,2,3,4,6,7,8-HPCDF	67562-39-4	25	25	NA	50	2.1	25
1,2,3,4,7,8-HxCDD	39227-28-6	25	25	NA	50	2.8	25
1,2,3,4,7,8-HXCDF	70648-26-9	25	25	NA	50	2.6	25
1,2,3,4,7,8,9-HPCDF	55673-89-7	25	25	NA	50	3.0	25
1,2,3,6,7,8-HxCDD	57653-85-7	25	25	NA	50	2.9	25
1,2,3,6,7,8-HXCDF	57117-44-9	25	25	NA	50	2.5	25
1,2,3,7,8,9-HxCDD	19408-74-3	25	25	NA	50	3.2	25
1,2,3,7,8,9-HXCDF	72918-21-9	25	25	NA	50	3.1	25
1,2,3,7,8-PeCDD	40321-76-4	25	25	NA	50	2.2	25
1,2,3,7,8-PECDF	57117-41-6	25	25	NA	50	1.9	25
2,3,4,6,7,8-HXCDF	60851-34-5	25	25	NA	50	2.6	25
2,3,4,7,8-PECDF	57117-31-4	25	25	NA	50	1.8	25
2,3,7,8-TCDD	1746-01-6	10	10	NA	10	1.5	10
2,3,7,8-TCDF	51207-31-9	10	10	NA	10	1.2	10
OCDD	3268-87-9	50	50	NA	100	4.1	50
OCDF	39001-02-0	50	50	NA	100	3.4	50
Total Heptachlorodibenzofuran (HpCDF)	3898-75-3	NA	25	NA	NA	NA	25
Total Heptachlorodibenzo-p-dixoin (HpCDD)	37871-00-4	NA	25	NA	NA	NA	25
Total Hexachlorodibenzofuran (HxCDF)	55684-94-1	NA	25	NA	NA	NA	25

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Total Hexachlorodibenzo-p-dioxin (HxCDD)	34465-46-8	NA	25	NA	NA	NA	25
Total Pentachlorodibenzofuran (PeCDF)	60402-15-4	NA	25	NA	NA	NA	25
Total Pentachlorodibenzo-p-dioxin (PeCDD)	36088-22-9	NA	25	NA	NA	NA	25
Total Tetrachlorodibenzofuran (TCDF)	55722-27-5	NA	10	NA	NA	NA	10
Total Tetrachlorodibenzo-p-dioxin (TCDD)	41903-57-5	NA	10	NA	NA	NA	10

[a] PALs based on laboratory QLs derived from the low point of calibration. Note PALs are not risk based for this program.

[b] Analytical MDLs and QLs are those documented in validated methods, modified for a 1 g sample size. "NA" indicates that MDL and/or QL values were not included in the validated methods.

[c] Achievable EDLs (based on laboratory averaged EDLs) and QLs are limits that an individual laboratory can achieve when performing a specific analytical method. Actual EDLs and QLs will vary based on sample-specific factors. All results between the EDL and QL will be reported as estimated values (J qualifier). Laboratory results will be reported in pg/sample, rather than pg/g. The laboratory reporting limit (i.e., the numerical value associated with a non-detect) will be based on the sample-specific EDL. Matrix interference can increase EDLs by as much as a factor of 10x.

The volume of water to be sampled is dependent on the mass of suspended sediment at each station, as measured during Routine Event #1 and Routine Event #2 of the SV CWCM program. The volume of water sampled is calculated assuming 1g of solids may be separated assuming the lower end of the SSC from the SV CWCM data, with a buffer of 1g (2g solids total to be removed), rounded up to the nearest 25 L. Refer to Worksheet #37 for details on the data usability assessment with regard to sensitivity and calculations using SSC data and flow volume..Estimated volumes are provided below. Target volumes to be sampled will be confirmed in the field, based on data provided using the LISST. If the data from the LISST indicate that the water column sediment concentration is substantially higher or lower than anticipated, the proposed volume to be sampled may be modified. The field records will include the proposed sampling volume per the HV CWCM QAPP, LISST measurements, modified proposed sampling volume (including assumptions and calculations, if required based on the LISST data), and the actual sample volume collected.

Location	SSC[1] (mg/L)	Date SSC Measured	Volume to achieve 2g solid at known SSC[2]	Pumping Time [3]
Above Dundee Dam	2.5	2/20/2012	2,000 mg solid ÷ 2.5 mg SSC / L = 800 L Proposed estimated sampling volume = 800 L	800L ÷ 1.5 L/min = 533 min 533 min ÷ 60 min/hr = 9 hr
RM 10.2	3.1	2/20/2012	2,000 mg solid ÷ 3.1 mg SSC / L = 645 L Proposed estimated sampling volume = 650 L	650L ÷ 1.5 L/min = 433 min 433 min ÷ 60 min/hr = 7.5 hr
RM 4.2 (Tidal 2)	11.9	2/21/2012	2,000 mg solid ÷ 11.9 mg SSC / L = 168 L Proposed estimated sampling volume = 175 L	175L ÷ 1.5 L/min = 117 min 117 min ÷ 60 min/hr = 2 hr

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Kill van Kull	5.1	8/17/2011	2,000 mg solid ÷ 5.1 mg SSC / L = 392 L Proposed estimated sampling volume = 400 L	400L ÷ 1.5 L/min = 267 min 267 min ÷ 60 min/hr = 4.5 hr
Newark Bay South	4.9	8/18/2011	2,000 mg solid ÷ 4.9 mg SSC / L = 408 L Proposed estimated sampling volume = 425 L	425L ÷ 1.5 L/min = 283 min 283 ÷ 60 min/hr = 5 hr
Newark Bay Northeast	8.9	2/22/2012	2,000 mg solid ÷ 8.9 mg SSC / L = 224 L Proposed estimated sampling volume = 225 L	225L ÷ 1.5 L/min = 150 min 150 min ÷ 60 min/hr = 2.5 hr

[1] The lowest SSC detected during SV Routine Events #1 and #2.

[2] 2,000 mg solid ÷ mg SSC / L = L to be sampled, rounded up to the nearest 25L.

[3] Pumping time is rounded up to nearest 0.5 hours and assumes maximum flow rate of 1.5 L/min is achieved and maintained for duration of sampling. Time does not include set-up or break-down of equipment on site, and does not include time for filter changes. Actual sampling duration per station will be higher.

QAPP Worksheet #15 (UFP-QAPP Manual Section 2.8.1) Data Quality Levels Reference Limits and Analytical Method Evaluation Table

Matrix: Water
Analytical Group: General Chemistry (see methods below), Columbia Analytical Services, Kelso, WA
Concentration Level: Low

Analyte	CAS Number	Laboratory SOP[a]	PAL[b]	Units	Project QL (ug/L)	Analytical Method[c]		Achievable Laboratory Limits[d]	
						MDLs	Method QLs	MDLs	QLs
DOC	NA	C-13, C-16	300	ug/L	300	NA	NA	100	300
POC	NA	C-16	1300	mg/kg	1300	NA	NA	500	1300
SSC	NA	C-17	1.0	mg/L	NA	NA	NA	1.0	1.0

[a] Refer to Worksheet #23 for laboratory SOPs.

[b] PALs are equivalent to the Project QLs.

[c] Analytical MDLs and QLs are those documented in validated methods.

[d] Achievable MDLs and QLs are limits that the selected laboratory can achieve when performing the specified methods (Worksheet #23) with nominal sample volumes in the absence of interferences. Actual MDLs and QLs will vary based on sample specific factors. All results between the MDL and QL will be reported as estimated values (J qualifier). The reporting limit (i.e., the numerical value associated with a non-detect) will be the QL.