

Data Memorandum

August 9, 2017

From: Clay Patmont and Nathan Soccorsy, Anchor QEA, LLC

Paul McCollum, Roma Call and Christine Raczka, Port Gamble S'Klallam Tribe

cc: Linda Berry-Maraist and Stephanie Foster, Pope Resources/Olympic Property Group

Re: Supplemental Port Gamble Bay In-Situ Shellfish Monitoring Data Memorandum

This data memorandum summarizes the results of in-situ shellfish monitoring performed following the completion of in-water construction activities in Port Gamble Bay, in accordance with the May 2015 *Port Gamble Bay Cleanup Project Shellfish Monitoring Plan (SMP)* prepared by Anchor QEA and the Port Gamble S'Klallam Tribe. Consistent with U.S. Army Corps of Engineers permit requirements for the Port Gamble Bay Cleanup Project (NWS-2013-1270), baseline shellfish monitoring locations and target species previously sampled by the Port Gamble S'Klallam Tribe between 2008 and 2012, and analyzed for chemicals of concern by the Washington State Department of Ecology, were resampled in 2017 to provide an updated characterization of in-situ shellfish tissue concentrations in Port Gamble Bay. This data memorandum summarizes sampling and analysis activities, validated tissue concentrations, and compares post-construction and baseline levels.

Post-construction Shellfish Sampling

In-situ shellfish sampling in Port Gamble Bay was successfully performed by the Port Gamble S'Klallam Tribe from April 24 to 28, 2017. All target species specified in the SMP were collected from the sampling beaches, as well as from subtidal areas of sediment management area (SMA)-3. Sampling areas are depicted on Figure 1. All specimens were submitted for laboratory testing without depuration. There were no sampling deviations from the SMP.

In-situ Shellfish Chemical Analyses

Post-construction tissue concentration data for Port Gamble Bay chemicals of concern (CoCs) identified in the SMP are summarized in Appendix A. Laboratory reports and data validation reports are included in Appendix B and C, respectively.

Data Validation and Usability

All analytical chemistry data presented in this memorandum were validated by Laboratory Data Consultants, Inc., of Carlsbad, California. Consistent with the SMP, data validation was performed following U.S. Environmental Protection Agency guidelines. Data validation verified that the target accuracy and precision of all chemical analyses. Data qualifiers assigned from the data validation are provided on each of the respective analytical results tables. Data qualified with a "J" indicates that the

associated numerical value is the approximate concentration of the analyte. Data qualified with a "U" indicates that the analyzed compound was not detected above the reporting limit. Data qualified with a "UJ" indicates the approximate reporting limit below which the analyte was not detected. Data qualifications did not impact the data quality objectives, and all data were determined to be useable for site characterization as reported from the laboratory or as qualified in this data report.

Reference Concentrations

Consistent with prior shellfish data monitoring reports prepared for the Port Gamble Bay Cleanup Project, 2017 post-construction Port Gamble Bay shellfish tissue CoC concentrations were evaluated relative to several reference levels to provide context for data comparisons. Reference levels included pre-construction baseline (2008 to 2012) levels measured in Port Gamble Bay, as well as regional shellfish tissue levels reported in other natural background and non-urban shellfish protection and harvest districts in the greater Puget Sound region. Data sources compiled for the regional non-urban comparison included the following:

- Natural background shellfish tissue concentrations reported in the Port Gamble Bay remedial investigation
- Non-urban bivalve (clams, mussels, and oysters) as well as fish and crab tissue concentrations in relatively pristine areas of Puget Sound reported in the Lower Duwamish Waterway remedial investigation, including tissue samples collected from Freshwater Bay (Straits of Juan de Fuca)
- Non-urban bivalve tissue concentrations in the Holmes Harbor shellfish protection and harvest district

Chemical-specific CoC analyses are summarized in the following subsections.

Note: To provide additional context, the charts presented in Figures 2-5 show pre-construction baseline concentrations as an average of the four Port Gamble Bay sampling locations, and the post-construction data as both an average of the same four locations, as well as the individual sampling area. For all CoCs, Point Julia tissue concentrations were among the lowest of the three sample sites. CoC-specific comparisons are summarized below.

Polycyclic Aromatic Hydrocarbons

Carcinogenic polycyclic aromatic hydrocarbons (cPAHs) were identified in the Port Gamble Bay remedial investigation as the primary Site-related human health CoC in shellfish tissue, largely attributable to historical releases from creosote piling adjacent the former sawmill facility. As discussed in Cleanup Action Reports prepared for this Project, throughout the two in-water construction seasons, creosote piling were protectively removed from the Bay with minimal breakage. Post-construction cPAH toxicity equivalent (TEQ) concentrations in shellfish tissues were slightly lower than pre-construction baseline levels (Figure 2), consistent with similar declines in

caged mussel levels reported previously. Current post-construction cPAH TEQ concentrations in Port Gamble Bay shellfish are also within the range of non-urban Puget Sound bivalve levels.

Dioxins/Furans

Post-construction dioxin/furan TEQ concentrations in Port Gamble Bay shellfish tissues were also slightly lower than pre-construction baseline levels (Figure 3), within the range of non-urban Puget Sound bivalve levels.

Cadmium

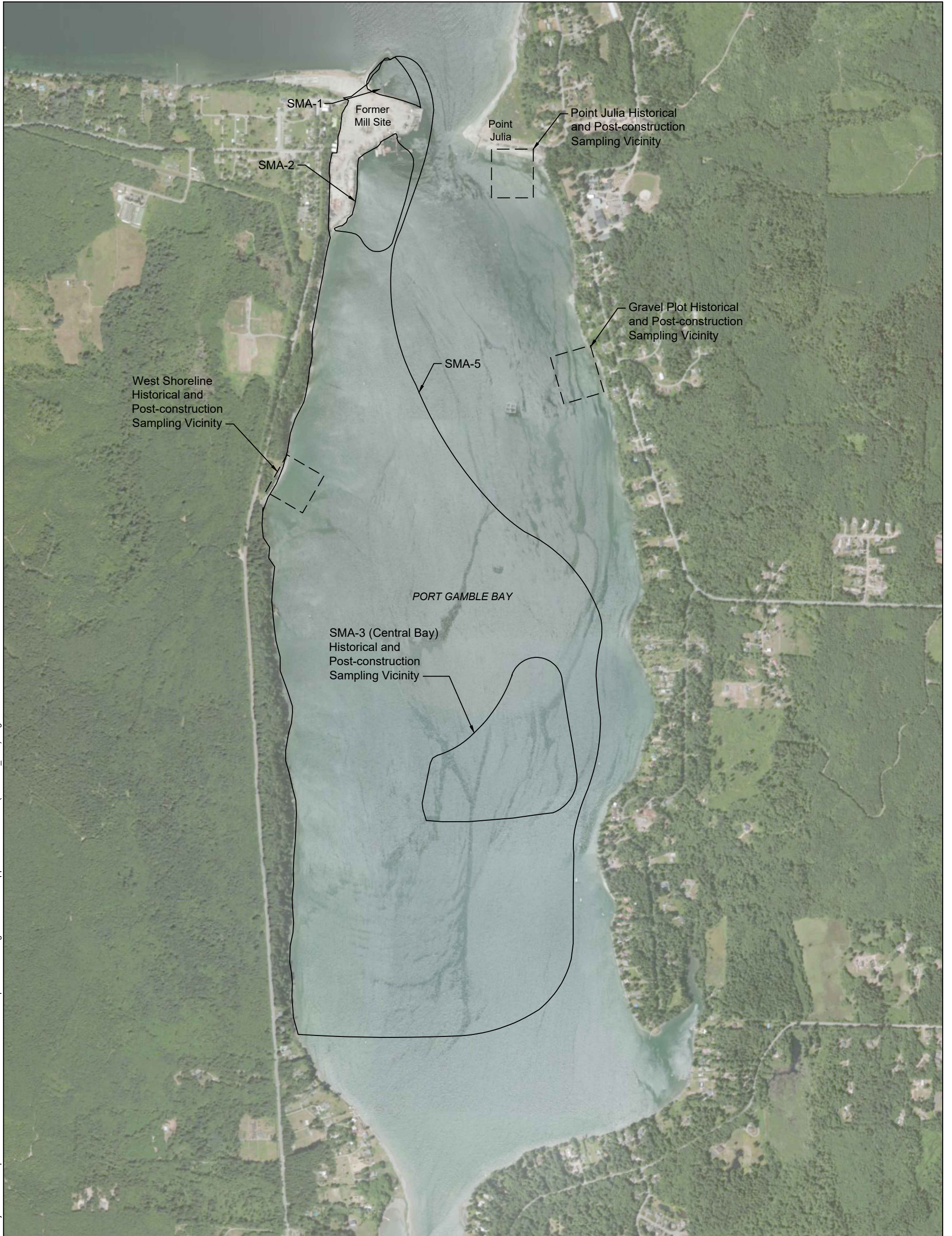
Post-construction cadmium concentrations in Port Gamble Bay shellfish tissues were slightly higher than pre-construction baseline levels (Figure 4), but within the range of statistical variability and also generally within the range of non-urban Puget Sound bivalve levels.

Polychlorinated Biphenyls

While not identified as a Site-related CoC, total polychlorinated biphenyls (PCBs; congener analyses) were included in the SMP to track changes over time. Compared to the other CoCs, post-construction total PCB concentrations in Port Gamble Bay shellfish tissues were significantly lower than pre-construction baseline levels (Figure 5); current concentrations are now within the range of non-urban Puget Sound bivalve levels.

Figures

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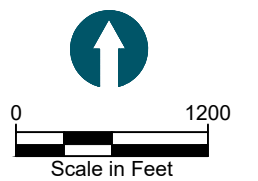
HORIZONTAL DATUM: Washington State Plane North, NAD83, U.S. Feet.

LEGEND:

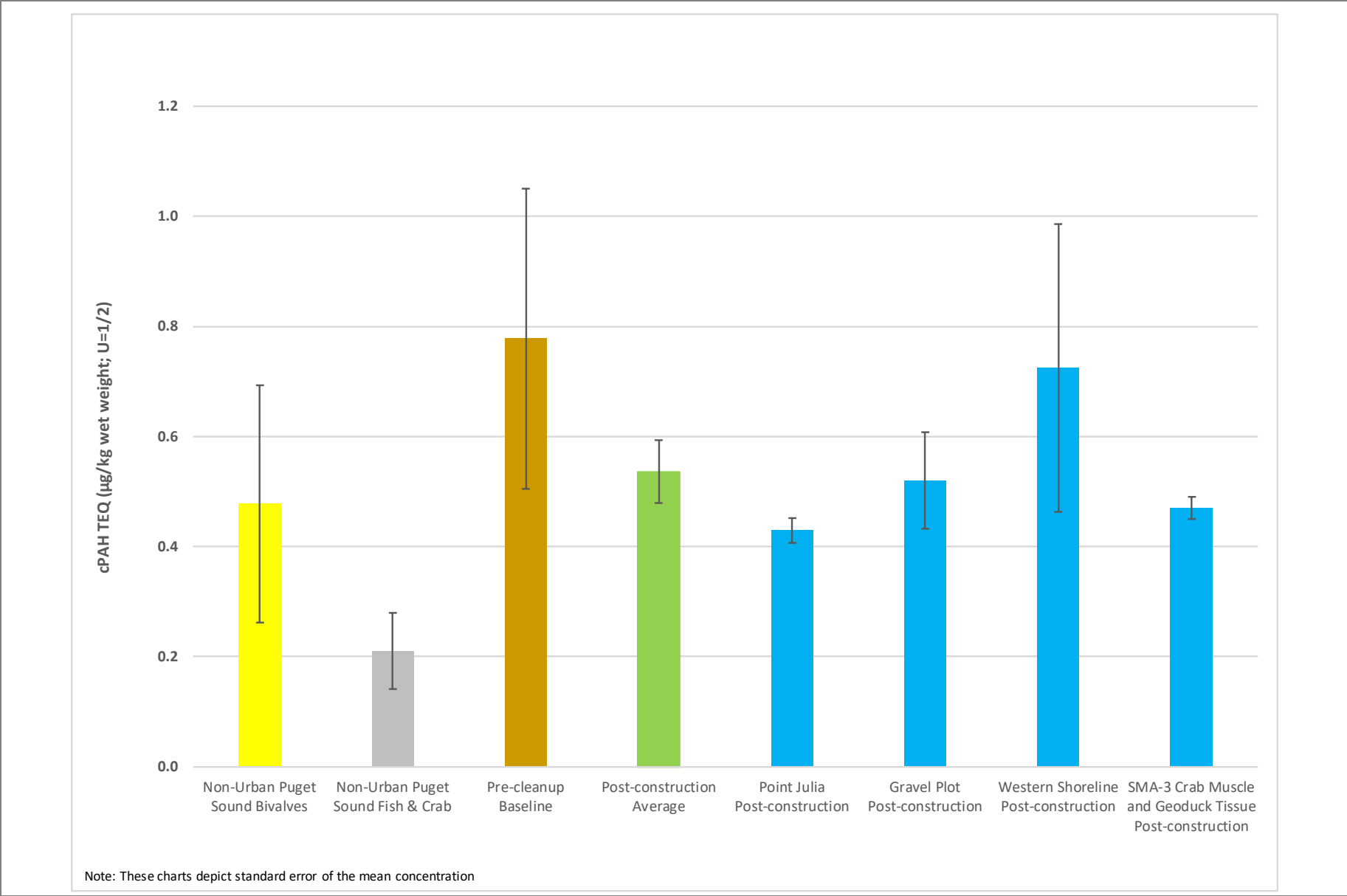
- SMA Area
- - - - Wild Shellfish Sampling Area

NOTES:

1. For in-situ wild shellfish sampling, historical sampling areas were reoccupied and target species to collected consisted of those previously sampled.



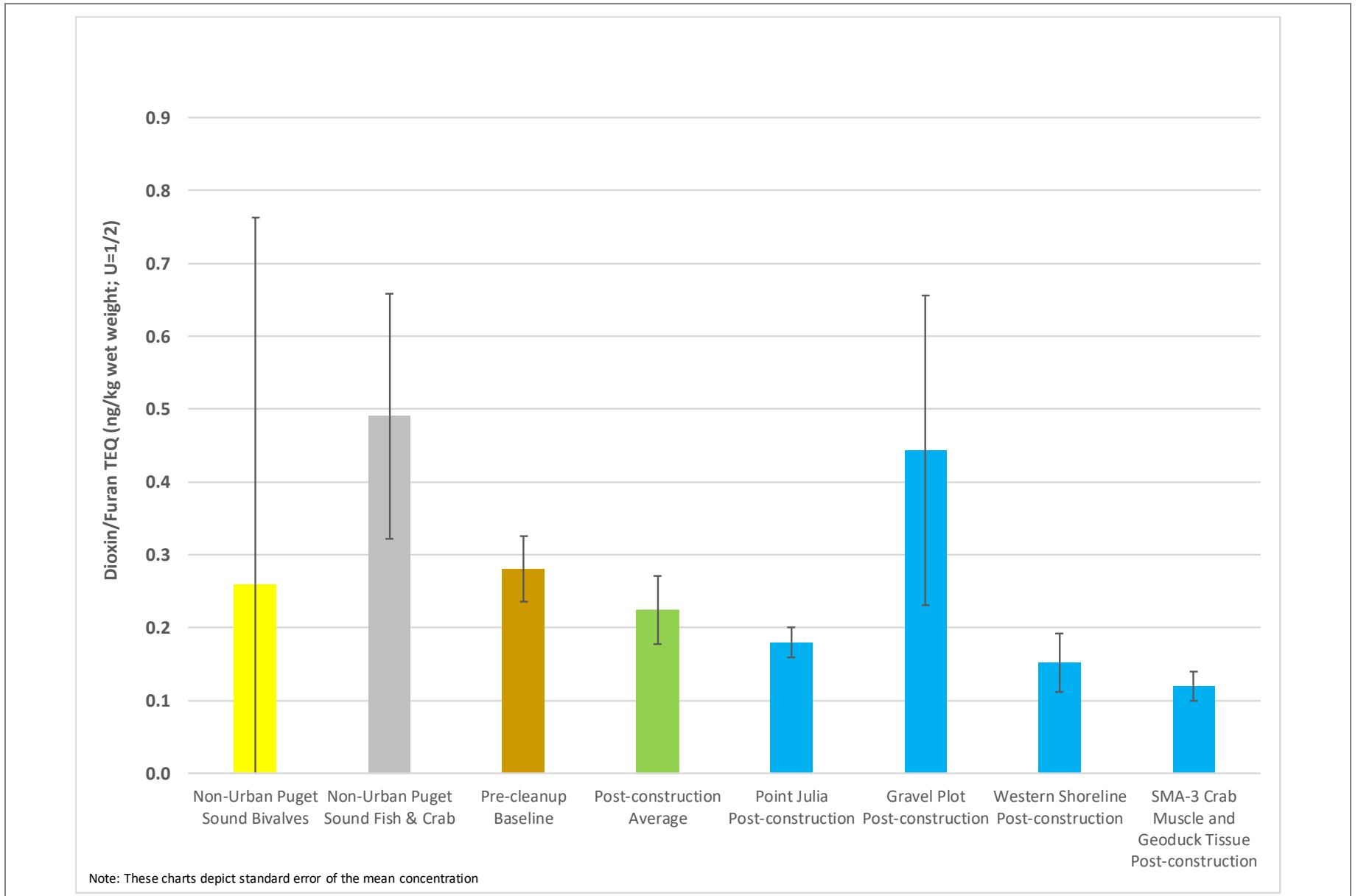
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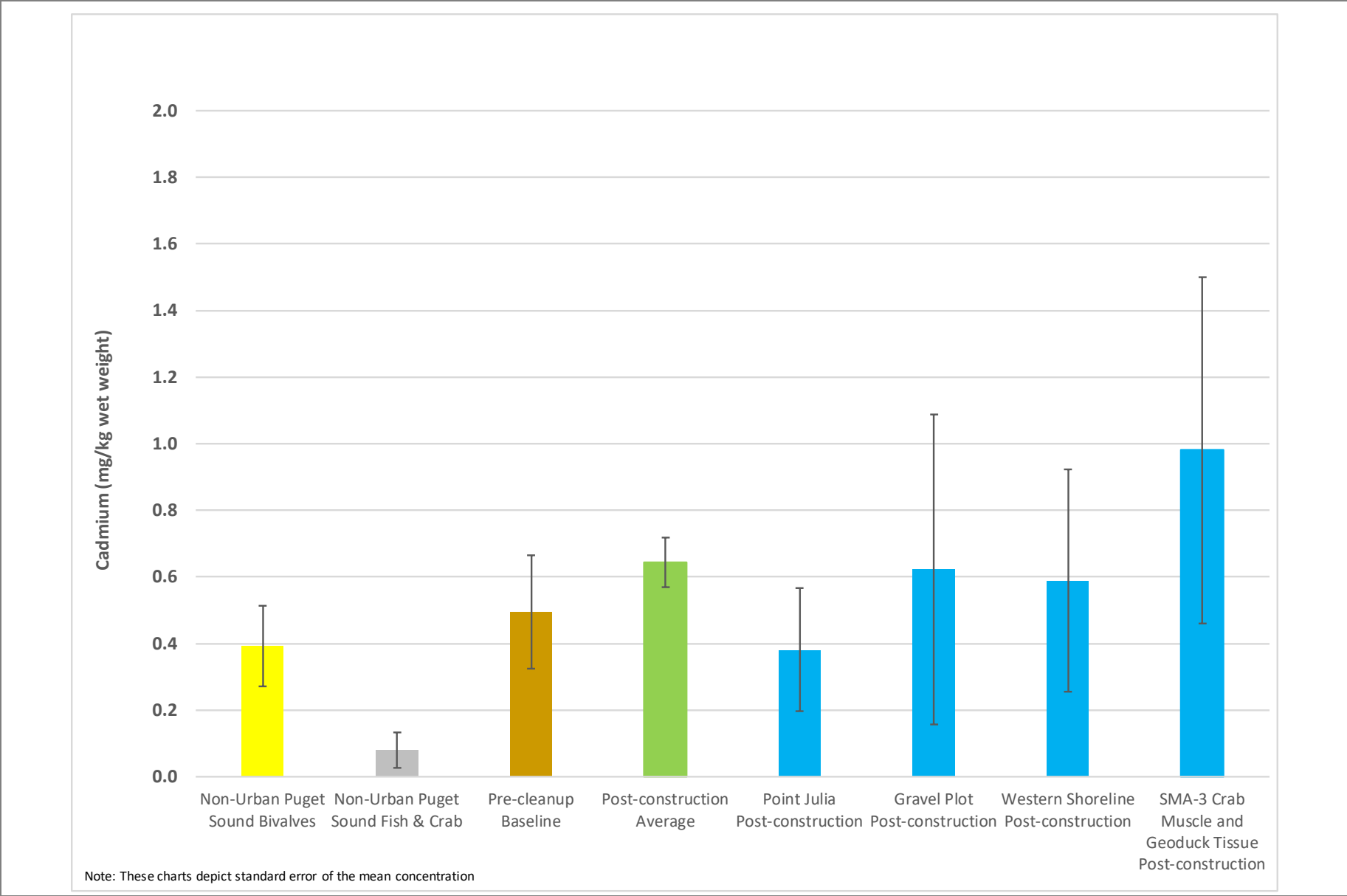
Figure 2
cPAH TEQ Concentration Comparisons
 Supplemental Port Gamble Bay In Situ Shellfish Monitoring Data Memorandum
 Port Gamble Bay Cleanup Project



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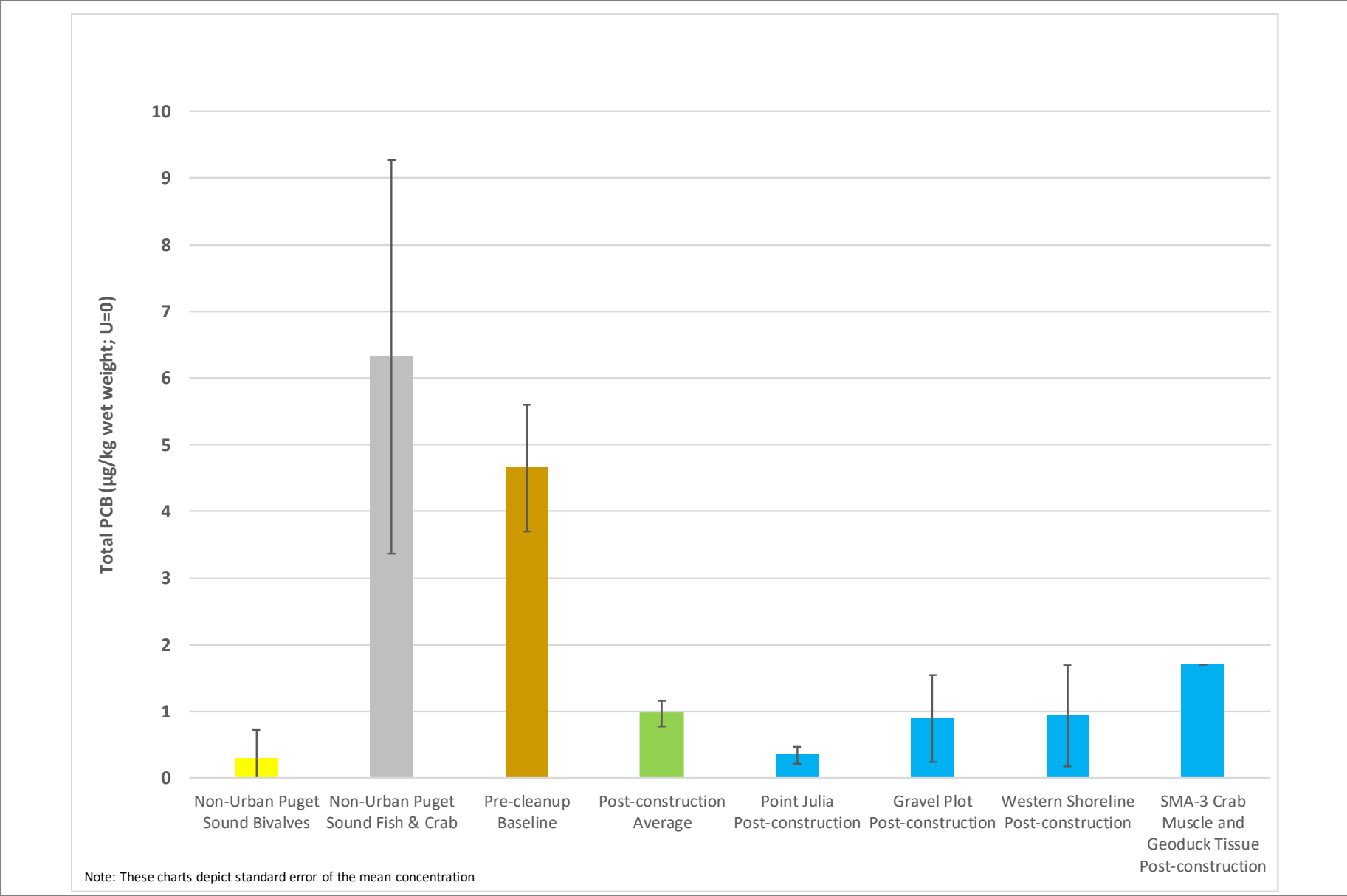
Figure 3
Dioxin/Furan TEQ Concentration Comparisons
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Figure 4
Cadmium Concentration Comparisons
 Supplemental Port Gamble Bay In Situ Shellfish Monitoring Data Memorandum
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Figure 5
PCB Concentration Comparisons
 Supplemental Port Gamble Bay In Situ Shellfish Monitoring Data Memorandum
 Port Gamble Bay Cleanup Project

Appendix A

Port Gamble In Situ Shellfish and Crab Monitoring Results

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-GP	PG-GP	PG-GP	PG-PJ	PG-PJ	PG-PJ
Location ID	PG-GP_InSitu	PG-GP_InSitu	PG-GP_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu
Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
Sample Date	4/24/2017	4/24/2017	4/24/2017	4/27/2017	4/28/2017	4/27/2017
X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
Conventional Parameters (pct)						
Lipids	1.4	0.82 U	2.4	0.64 U	0.79 U	0.94 U
Total solids	12.2	11.3	17	9.91	14.3	13.1
Metals (mg/kg)						
Cadmium	0.0823	0.235	1.55	0.0601	0.163	0.207
Polycyclic Aromatic Hydrocarbons (µg/kg)						
2-Methylnaphthalene	0.72	0.63	0.5 U	0.48 U	0.49 U	0.5 U
Acenaphthene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Acenaphthylene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Anthracene	0.5 U	0.5 U	0.52	0.48 U	0.49 U	0.5 U
Benzo(a)anthracene	0.5 U	0.5 U	1.49	0.48 U	0.49 U	0.5 U
Benzo(a)pyrene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Benzo(b)fluoranthene	0.5 U	0.5 U	1.39	0.48 U	0.49 U	0.5 U
Benzo(e)pyrene	0.5 U	0.5 U	1.21	0.48 U	0.49 U	0.5 U
Benzo(g,h,i)perylene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Benzo(k)fluoranthene	0.5 U	0.5 U	0.65	0.48 U	0.49 U	0.5 U
Chrysene	0.67	0.5 U	3.08	0.48 U	0.49 U	0.5
Dibenzo(a,h)anthracene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Fluoranthene	1	1.44	6.35	0.64	0.49 U	1.36
Fluorene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Indeno(1,2,3-c,d)pyrene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Naphthalene	0.6 U	0.6 U	0.6 U	0.58 U	0.59 U	0.6 U
Perylene	0.5 U	0.5 U	0.5 U	0.48 U	0.49 U	0.5 U
Phenanthrene	0.7	0.97	1.96	0.48 U	0.49 U	0.79
Pyrene	0.58	0.93	3.56	0.48 U	0.49 U	0.93
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	0.38	0.5 U	0.68	0.48 U	0.49 U	0.38
Total PAH (19) (U = 1/2)	7.2	7.8	23	5	0.59 U	7.4
Total HPAH (SMS) (U = 1/2)	4	4.4	18	2.8	0.49 U	4.5
Total LPAH (SMS) (U = 1/2)	2	2.3	3.5	0.58 U	0.59 U	2.1
Total PAH (SMS) (U = 1/2)	6	6.6	21	4.3	0.59 U	6.6
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	0.0067	0.5 U	0.38	0.48 U	0.49 U	0.005
Total PAH (19) (U = 0)	3.7	4	20	0.64	0.59 U	3.6
Total HPAH (SMS) (U = 0)	2.3	2.4	17	0.64	0.49 U	2.8
Total LPAH (SMS) (U = 0)	0.7	0.97	2.5	0.58 U	0.59 U	0.79
Total PAH (SMS) (U = 0)	3	3.3	19	0.64	0.59 U	3.6
Dioxin Furans (ng/kg)						
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.277 U	0.061 U	0.084 U	0.049 U	0.048 U	0.227 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.135 U	0.13 U	0.385 J	0.056 U	0.114 U	0.069 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.153 U	0.077 U	0.389 J	0.081 U	0.077 U	0.079 U

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Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.161 U	0.075 U	0.453 J	0.083 U	0.076 U	0.082 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.221 J	0.103 J	0.657 J	0.09 U	0.084 U	0.089 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1.09 U	0.601 U	1.89 J	0.264 U	0.166 U	0.378 U
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	10.4	4.78 U	15.3	1.74 U	1.23 U	4.19 U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	0.277 J	0 U	1.51	0 U	0 U	0.227 J
Total Pentachlorodibenzo-p-dioxin (PeCDD)	0.135 J	0 U	1.19	0 U	0 U	0 U
Total Hexachlorodibenzo-p-dioxin (HxCDD)	0.869	0.232 J	2.6	0 U	0 U	0.149 J
Total Heptachlorodibenzo-p-dioxin (HpCDD)	4.03	2.1 J	6.59	0.976 J	0.325 J	1.74 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.068 U	0.048 U	0.378 J	0.041 U	0.038 U	0.05 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.226 U	0.069 U	0.28 U	0.057 U	0.043 U	0.057 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.084 U	0.074 J	0.275 J	0.052 U	0.04 U	0.055 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.147 U	0.081 U	0.322 U	0.041 U	0.05 U	0.039 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.18 U	0.081 U	0.361 J	0.04 U	0.047 U	0.048 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.144 U	0.117 U	0.582 U	0.062 U	0.078 U	0.109 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.139 U	0.092 U	0.432 J	0.044 U	0.052 U	0.04 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.415 U	0.17 U	0.775 J	0.069 U	0.036 U	0.16 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.142 U	0.041 U	0.582 J	0.062 U	0.061 U	0.084 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	0.634 U	0.452 U	1.79 J	0.158 U	0.2 U	0.401 U
Total Tetrachlorodibenzofuran (TCDF)	0 U	0 U	4.11	0 U	0 U	0 U
Total Pentachlorodibenzofuran (PeCDF)	0.319 J	0.143 J	1.77	0.056 J	0 U	0 U
Total Hexachlorodibenzofuran (HxCDF)	0.866 J	0.29 J	2.02	0 U	0.078 J	0.157 J
Total Heptachlorodibenzofuran (HpCDF)	0.834 J	0.378 J	1.89	0.069 J	0 U	0.304 J
Total Dioxin/Furan (U = 1/2)	13 J	3.6 J	24 J	1.7 U	1.2 U	4.2 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	0.31 J	0.16 J	0.86 J	0.056 U	0.11 U	0.23 U
Total Dioxin/Furan (U = 0)	11 J	0.18 J	24 J	1.7 U	1.2 U	4.2 U
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	0.025 J	0.033 J	0.77 J	0.056 U	0.11 U	0.23 U
PCB Congeners (ng/kg)						
PCB-001	1.2 U	1 U	2.2 U	0.21 J	0.22 U	0.22 U
PCB-002	1 U	0.89 U	1.9 U	0.47 J	0.17 U	0.2 U
PCB-003	1.2 U	1 U	2.2 U	0.32 J	0.2 U	0.59 U
PCB-004	3.8 U	6.3 J	5 U	0.48 U	0.59 U	2.7 U
PCB-005	2.1 U	3.4 U	1.7 U	0.3 U	0.43 U	0.33 U
PCB-006	1.6 U	2.7 U	1.4 U	0.25 U	0.36 U	0.28 U
PCB-007	1.7 U	2.8 U	1.4 U	0.25 U	0.37 U	0.28 U
PCB-008	1.4 U	2.3 U	2.2 U	1 U	1.16 J	1.08 J
PCB-009	1.6 U	2.6 U	1.3 U	0.24 U	0.36 U	0.27 U
PCB-010	3.7 U	4.1 U	4.8 U	0.48 U	0.59 U	2.7 U
PCB-011	7.5 U	11 U	16.3 U	6.02 U	7.56 U	10.9 U
PCB-012/013	1.7 U	2.8 U	1.4 U	0.25 U	0.37 U	0.28 U

Appendix A
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Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
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X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
PCB-014	1.6 U	2.6 U	1.3 U	0.25 U	0.36 U	0.28 U
PCB-015	2.6 U	4.3 U	2.2 U	0.96 U	0.88 U	1.1 U
PCB-016	3.9 U	1.4 U	3.3 U	0.93 U	1.1 U	0.74 U
PCB-017	3.4 U	3 J	3.4 J	0.82 U	0.96 J	0.96 J
PCB-018/030	2.8 U	12.1 J	6.4 U	1.71 J	1.95 J	3.3 U
PCB-019	2.7 U	0.99 U	2.3 U	0.65 U	0.74 U	0.42 U
PCB-020/028	6.53 U	4.06 U	29.1 U	4.33 U	4.17 U	4.13 U
PCB-021/033	2.43 J	5.74 J	6.66 J	1.41 J	1.45 J	2.04 J
PCB-022	1.84 U	0.75 U	6.94 U	1.21 U	1.15 U	0.78 U
PCB-023	0.42 U	0.55 U	0.64 U	0.25 U	0.22 U	0.19 U
PCB-024	2.6 U	0.93 U	2.1 U	0.62 U	0.71 U	0.4 U
PCB-025	0.39 U	0.69 J	1.7 U	0.35 J	0.38 J	0.86 J
PCB-026/029	0.67 U	1.91 J	3.37 J	0.57 U	0.65 U	0.94 J
PCB-027	2.4 U	0.89 U	2 U	0.56 U	0.64 U	0.37 U
PCB-031	3.73 J	4.53 J	17	2.1 U	2.97 J	3.36 J
PCB-032	2.2 U	0.79 U	3.3 J	0.69 J	0.64 U	0.41 U
PCB-034	0.4 U	0.53 U	0.62 U	0.25 U	0.21 U	0.18 U
PCB-035	0.4 U	0.53 U	0.69 U	0.24 U	0.24 U	0.39 J
PCB-036	0.34 U	0.45 U	1.85 J	0.21 U	0.18 U	0.29 U
PCB-037	1.19 J	0.84 J	4.71 J	1.04 J	1.3 U	0.77 U
PCB-038	0.39 U	0.51 U	0.6 U	0.23 U	0.2 U	0.45 U
PCB-039	0.38 U	0.51 U	0.59 U	0.23 U	0.2 U	0.17 U
PCB-040/041/071	4.5 U	1.6 U	24.6 J	2.82 J	2.6 U	2.23 J
PCB-042	2.51 J	1.1 U	15.2	1.2 U	1.87 J	0.71 U
PCB-043	0.88 U	1.4 U	1.9 U	0.48 U	0.63 U	0.28 U
PCB-044/047/065	12.8 U	7.4 U	58.9 U	11.3 U	13.3 U	14.3 U
PCB-045/051	1.1 U	1 U	5.2 U	1.33 J	1.3 U	1.65 J
PCB-046	0.74 U	1.2 U	2.09 J	0.42 U	0.56 U	0.25 J
PCB-048	1.62 J	7.05 J	7.78 J	0.91 J	0.92 U	2.78 J
PCB-049/069	4.82 J	5.7 J	44.6	3.34 J	4.5 U	4.53 J
PCB-050/053	1 J	0.98 U	6.31 J	0.47 U	0.87 J	0.4 J
PCB-052	13.3 U	26 U	86 U	7.83 U	9.55 U	12.4 U
PCB-054	0.61 U	0.44 U	0.66 U	0.27 U	0.78 U	0.4 U
PCB-055	0.58 U	0.54 U	0.91 U	0.18 U	0.54 U	0.16 U
PCB-056	2.3 U	0.7 J	13.5	1.47 J	1.6 U	0.75 J
PCB-057	0.53 U	0.5 U	0.84 U	0.16 U	0.51 U	0.15 U
PCB-058	0.57 U	0.54 U	0.9 U	0.17 U	0.52 U	0.16 U
PCB-059/062/075	0.73 U	0.76 U	5.64 J	0.49 J	0.63 U	0.21 U
PCB-060	1.64 J	0.54 U	9.09 J	0.95 J	0.89 J	0.65 U

Appendix A
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Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-GP	PG-GP	PG-GP	PG-PJ	PG-PJ	PG-PJ
Location ID	PG-GP_InSitu	PG-GP_InSitu	PG-GP_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu
Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
Sample Date	4/24/2017	4/24/2017	4/24/2017	4/27/2017	4/28/2017	4/27/2017
X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
PCB-061/070/074/076	13.2 U	8.66 U	82.1 U	7.21 U	9.72 U	7.5 U
PCB-063	0.51 U	0.48 U	1.94 J	0.2 U	0.49 U	0.25 J
PCB-064	3.85 J	0.81 U	24.1	2.77 J	2.96 J	1.91 J
PCB-066/095	7.65 U	2.62 U	38.9 U	4.16 U	4.95 U	2.8 U
PCB-067	0.52 U	0.48 U	1.7 J	0.16 U	0.5 U	0.42 J
PCB-068	1.24 U	0.92 U	2.14 U	1.96 U	2.24 U	2.72 U
PCB-072	0.52 U	0.48 U	1.23 J	0.16 U	0.49 U	0.15 U
PCB-073	0.44 U	0.71 U	0.46 U	0.24 U	0.32 U	0.14 U
PCB-077	0.72 U	0.68 U	5 J	0.44 U	0.88 J	0.24 J
PCB-078	0.53 U	0.5 U	0.83 U	0.16 U	0.48 U	0.15 U
PCB-079	0.48 U	0.45 U	2.09 J	0.14 U	0.44 U	0.13 U
PCB-080	0.48 U	0.46 U	0.76 U	0.15 U	0.46 U	0.14 U
PCB-081	0.72 U	0.67 U	1.1 U	0.22 U	0.67 U	0.2 U
PCB-082	2.27 J	1 U	9.49 J	0.96 J	1.1 U	0.63 J
PCB-083/099	19.2 J	7.44 J	162	10.7 J	15.9 J	8.28 J
PCB-084	3.83 J	1 U	26.1	2.33 J	3.08 J	1.37 J
PCB-085/116/117	4.6 U	1.5 U	26.9 U	2.5 U	3.01 U	1.82 U
PCB-086/087/097/109/119/125	10.5 J	4.84 J	94.1	6.15 J	9.57 J	5.62 J
PCB-088/091	1.9 U	0.92 U	23.6	1.37 J	2.42 J	0.92 J
PCB-089	0.62 U	0.96 U	1.38 J	0.15 U	0.23 U	0.43 U
PCB-090/101/113	25.3 J	39.6	210	13.1 J	20 J	24.6 J
PCB-092	5.18 J	2.91 J	40.4	2.4 U	4.45 J	3.12 J
PCB-093/095/098/100/102	0.61 U	0.94 U	9.1 J	0.54 J	0.85 J	0.5 J
PCB-094	0.66 U	1 U	1.1 U	0.16 U	0.24 U	0.45 U
PCB-095	10.7	3.28 J	116	6.5 U	9.99 J	5.37 J
PCB-096	0.34 U	0.5 U	0.67 U	0.2 U	0.16 U	0.54 U
PCB-103	0.54 U	0.82 U	3.2 U	0.13 U	0.31 J	0.37 U
PCB-104	0.23 U	0.35 U	0.46 U	0.13 U	0.077 U	0.37 U
PCB-105	8.48 U	2.57 U	47.1 U	4.27 U	8.45 U	2.95 U
PCB-106	0.46 U	0.41 U	0.51 U	0.41 U	0.19 U	0.12 U
PCB-107	2.85 J	1.03 J	17.2	1.2 U	1.59 J	0.85 J
PCB-108/124	0.87 J	0.44 U	5.83 J	0.47 J	0.6 J	0.26 U
PCB-110/115	23 U	5.93 U	165 U	11 U	17.8 U	9.21 U
PCB-111	0.45 U	0.69 U	0.7 J	0.11 U	0.16 U	0.3 U
PCB-112	0.49 U	0.75 U	0.69 U	0.12 U	0.18 U	0.32 U
PCB-114	0.58 U	0.51 U	2.42 J	0.46 U	0.22 U	0.18 J
PCB-118	21 U	7.39 U	168 U	11.1 U	18.1 U	8.37 U
PCB-120	0.41 U	0.63 U	1.6 U	0.125 J	0.15 U	0.28 U
PCB-121	0.46 U	0.7 U	0.65 U	0.11 U	0.17 U	0.31 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-GP	PG-GP	PG-GP	PG-PJ	PG-PJ	PG-PJ
Location ID	PG-GP_InSitu	PG-GP_InSitu	PG-GP_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu
Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
Sample Date	4/24/2017	4/24/2017	4/24/2017	4/27/2017	4/28/2017	4/27/2017
X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
PCB-122	0.51 U	0.45 U	1.41 J	0.41 U	0.19 U	0.12 U
PCB-123	0.64 U	0.57 U	1.93 J	0.51 U	0.29 U	0.15 U
PCB-126	0.54 U	0.48 U	0.6 U	0.43 U	0.2 U	0.13 U
PCB-127	0.47 U	0.42 U	0.52 U	0.36 U	0.17 U	0.11 U
PCB-128/166	7.93 J	3.5 J	32.5	4.49 J	8.26 J	2.7 J
PCB-129/138/163	57.7 U	26.6 U	382 U	36.5 U	60.1 U	31.4 U
PCB-130	4.1 J	1.4 U	13.3	2.41 J	2.7 U	1.8 J
PCB-131	1.2 U	1.5 U	2.3 U	0.54 U	0.71 U	0.66 U
PCB-132	10.5	3.1 J	89.8	6.67 J	10.4	5.31 J
PCB-133	1.4 J	1.3 U	9.7 U	0.68 U	1.06 J	1.27 J
PCB-134/143	2.3 J	1.4 U	12.5 J	1.2 U	1.3 U	0.85 J
PCB-135/151	14.3 J	5.7 J	151	9.36 J	12.9 J	8.76 J
PCB-136	3.31 J	0.84 U	35.5	2.43 J	2.5 U	2.29 J
PCB-137	1.1 U	1.4 U	5.9 J	0.49 U	0.75 J	1 U
PCB-139/140	1.2 J	1.2 U	7.5 J	0.64 U	0.71 U	0.52 U
PCB-141	5 J	2.4 J	20.8	2.56 J	3.94 J	1.7 U
PCB-142	1.1 U	1.4 U	1.9 U	0.48 U	0.64 U	0.59 U
PCB-144	1 U	1.1 U	11	1.1 J	1.49 J	1.02 J
PCB-145	0.8 U	0.9 U	0.76 U	0.27 U	0.31 U	0.27 U
PCB-146	9.94 J	7.7 J	107	6.42 J	8.4 U	5.7 U
PCB-147/149	34	9.2 J	353	23.7	37	18.5 J
PCB-148	1 U	1.1 U	2.19 J	0.32 U	0.37 U	0.33 U
PCB-150	0.73 U	0.82 U	1.79 J	0.27 U	0.31 U	0.27 U
PCB-152	0.75 U	0.84 U	0.71 U	0.23 U	0.26 U	0.23 U
PCB-153/168	57.4 U	29.8 U	642 U	36.8 U	70.8 U	37.1 U
PCB-154	1.2 U	1 U	18.2	0.79 U	2.1 J	0.95 J
PCB-155	0.55 U	0.62 U	0.53 U	0.18 U	0.2 U	0.18 U
PCB-156/157	2.64 J	1.2 U	11.3 J	1.55 J	1 U	1.29 J
PCB-158	4.27 J	1.74 J	13.7	2.1 U	3.7 J	1.5 U
PCB-159	0.6 U	0.39 U	0.93 U	0.17 U	0.24 U	0.31 U
PCB-160	0.86 U	1.1 U	1.4 U	0.36 U	0.48 U	0.44 U
PCB-161	0.73 U	0.89 U	1.2 U	0.33 U	0.44 U	0.4 U
PCB-162	0.61 U	0.4 U	1.44 J	0.17 U	0.24 U	0.31 U
PCB-164	4.26 J	0.91 U	20.3	2.62 J	2.21 J	1.1 U
PCB-165	0.81 U	0.99 U	1.3 U	0.35 U	0.46 U	0.43 U
PCB-167	1.58 J	0.44 U	10.3	0.72 U	0.98 J	0.62 J
PCB-169	0.69 U	0.45 U	1.1 U	0.19 U	0.28 U	0.36 U
PCB-170	5.2 U	3.6 U	5.9 U	3.1 J	2.4 U	3.2 UJ
PCB-171/173	3 J	3 U	16.2 J	1.4 U	1.6 U	1.53 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-GP	PG-GP	PG-GP	PG-PJ	PG-PJ	PG-PJ
Location ID	PG-GP_InSitu	PG-GP_InSitu	PG-GP_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu
Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
Sample Date	4/24/2017	4/24/2017	4/24/2017	4/27/2017	4/28/2017	4/27/2017
X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
PCB-172	1.3 J	3 U	4.7 U	0.48 U	0.6 U	0.89 UJ
PCB-174	6.6 J	2.9 U	4.5 U	4.4 J	8.56 J	3.63 J
PCB-175	0.77 U	4 U	4 U	0.45 U	0.81 J	0.22 UJ
PCB-176	0.6 U	3.1 U	6.9 U	0.61 U	0.29 U	0.75 J
PCB-177	8.1 J	4.2 J	48.3 J	4.4 U	9.35 J	2.9 UJ
PCB-178	5.58 J	4.1 U	33 J	2.72 J	5.1 J	3.41 J
PCB-179	4.34 J	2.8 U	29.4 J	2.9 J	0.27 U	2.45 J
PCB-180/193	13.6 UJ	9.3 UJ	50.1 UJ	7.17 UJ	6.77 UJ	8.92 UJ
PCB-181	1.1 U	2.9 U	4.6 U	0.48 U	0.6 U	0.75 UJ
PCB-182	0.77 U	4 U	4.1 U	0.31 U	0.38 U	0.22 UJ
PCB-183	6.02 J	2.6 U	32.8 J	3.84 J	9.52 J	3.98 J
PCB-184	0.58 U	3 U	3.1 U	0.23 U	0.28 U	0.16 UJ
PCB-185	1.2 U	3.2 U	5 U	0.53 U	0.66 U	0.82 UJ
PCB-186	0.64 U	3.3 U	3.3 U	0.25 U	0.31 U	0.18 UJ
PCB-187	23.9	9.4 J	177	11.4	34.3	16.4 J
PCB-188	0.58 U	0.35 U	1.2 U	0.23 U	0.28 U	0.16 U
PCB-189	0.72 U	0.96 U	1.1 U	0.62 U	0.87 U	0.89 U
PCB-190	0.79 U	2.2 U	3.5 U	0.6 J	0.53 J	0.54 UJ
PCB-191	0.79 U	2.2 U	3.4 U	0.35 U	0.44 U	0.54 UJ
PCB-192	0.88 U	2.4 U	3.9 U	0.39 U	0.49 U	0.61 UJ
PCB-194	3.3 J	2.7 U	3.4 U	0.4 U	0.58 U	1.7 U
PCB-195	2.2 U	2 U	3.5 U	0.26 U	1 U	0.46 U
PCB-196	5.6 U	3.6 U	5.6 U	0.43 U	1 U	2.1 J
PCB-197	4.2 U	2.7 U	4.3 U	0.1 U	0.78 U	0.83 U
PCB-198/199	8.3 J	6.2 J	5.9 U	4 J	9.6 J	3.4 U
PCB-200	4.5 U	2.9 U	4.5 U	0.11 U	0.83 U	0.88 U
PCB-201	4.2 U	2.7 U	6.7 J	0.1 U	1 U	0.83 U
PCB-202	4.4 U	2.9 U	19.3 J	0.53 U	2.9 U	1.4 U
PCB-203	5.5 U	3.6 U	5.6 U	0.57 U	3.9 U	1.1 U
PCB-204	4.3 U	2.8 U	4.4 U	0.1 U	0.8 U	0.85 U
PCB-205	0.93 U	0.89 U	0.58 U	0.24 U	0.56 U	0.33 U
PCB-206	5.6 U	8.9 J	1.9 U	3.83 J	8.5 U	6.29 J
PCB-207	1.3 U	1.2 U	1.5 U	0.76 U	2.5 J	0.67 U
PCB-208	5.2 J	5.5 J	1.8 U	2.9 J	6.11 J	3.07 J
PCB-209	13 U	15.3	1.1 U	5.21 J	11.1	6 U
Total PCB Congener (U = 1/2)	490 J	350 J	3200 J	270 J	430 J	280 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	0.038 J	0.048 U	0.051 J	0.025 J	0.015 J	0.012 J
Total PCB Congener (U = 0)	290 J	190 J	2200 J	160 J	270 J	170 J
Total PCB Congener TEQ 2005 (Mammal) (U = 0)	0.00013 J	0.048 U	0.0013 J	0.000047 J	0.00012 J	0.000087 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-GP	PG-GP	PG-GP	PG-PJ	PG-PJ	PG-PJ
Location ID	PG-GP_InSitu	PG-GP_InSitu	PG-GP_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu
Sample ID	PG-GP-COC-COC-170424	PG-GP-LTN-COC-170424	PG-GP-OYS-COC-170424	PG-PJ-COC-COC-170427	PG-PJ-HC-COC-170428	PG-PJ-LTN-COC-170427
Sample Date	4/24/2017	4/24/2017	4/24/2017	4/27/2017	4/28/2017	4/27/2017
X	1214169.44	1214169.44	1214169.44	1213132.38	1213132.38	1213132.38
Y	313747.69	313747.69	313747.69	316435.36	316435.36	316435.36
Dioxin Furans and PCB Congeners (ng/kg)						
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 1/2)	0.34 J	0.19 J	0.91 J	0.11 J	0.13 J	0.2 J
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 0)	0.025 J	0.033 J	0.77 J	0.000047 J	0.00012 J	0.000087 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-PJ	PG-PJ	PG-PJ	PG-SMA3	PG-SMA3
Location ID	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-SMA3_InSitu	PG-SMA3_InSitu
Sample ID	PG-PJ-MAN-COC-170427	PG-PJ-MUS-COC-170427	PG-PJ-OYS-COC-170427	PG-SMA3-DUNH-COC-170426	PG-SMA3-DUNM-COC-170426
Sample Date	4/27/2017	4/27/2017	4/27/2017	4/26/2017	4/26/2017
X	1213132.38	1213132.38	1213132.38	1212681.47	1212681.47
Y	316435.36	316435.36	316435.36	308268.92	308268.92
Conventional Parameters (pct)					
Lipids	0.73 U	0.72 U	1.4	31	0.46 U
Total solids	14	10.9	13	21.7	21.3
Metals (mg/kg)					
Cadmium	0.218	0.36	1.28	4.97	0.0396 U
Polycyclic Aromatic Hydrocarbons (µg/kg)					
2-Methylnaphthalene	0.49 U	0.5 U	0.49 U	1.21	0.49 U
Acenaphthene	0.49 U	0.5 U	0.49 U	0.99	0.49 U
Acenaphthylene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Anthracene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Benzo(a)anthracene	0.78	0.5 U	0.65	0.5 U	0.49 U
Benzo(a)pyrene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Benzo(b)fluoranthene	0.49 U	0.5 U	0.73	0.5 U	0.49 U
Benzo(e)pyrene	0.49 U	0.5 U	0.55	0.5 U	0.49 U
Benzo(g,h,i)perylene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Benzo(k)fluoranthene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Chrysene	0.83	0.55	1.65	0.5 U	0.49 U
Dibenzo(a,h)anthracene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Fluoranthene	0.93	0.68	3.41	0.5 U	0.49 U
Fluorene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Indeno(1,2,3-c,d)pyrene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Naphthalene	0.59 U	0.6 U	0.59 U	0.84	0.59 U
Perylene	0.49 U	0.5 U	0.49 U	0.5 U	0.49 U
Phenanthrene	0.59	0.69	1.05	0.5 U	0.49 U
Pyrene	0.56	0.5 U	2.01	0.5 U	0.49 U
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	0.43	0.38	0.47	0.5 U	0.49 U
Total PAH (19) (U = 1/2)	7.2	6	13	7	0.59 U
Total HPAH (SMS) (U = 1/2)	4.6	3.2	9.7	0.5 U	0.49 U
Total LPAH (SMS) (U = 1/2)	1.9	2	2.3	2.8	0.59 U
Total PAH (SMS) (U = 1/2)	6.4	5.2	12	5.3	0.59 U
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	0.086	0.0055	0.15	0.5 U	0.49 U
Total PAH (19) (U = 0)	3.7	1.9	10	3	0.59 U
Total HPAH (SMS) (U = 0)	3.1	1.2	8.4	0.5 U	0.49 U
Total LPAH (SMS) (U = 0)	0.59	0.69	1.1	1.8	0.59 U
Total PAH (SMS) (U = 0)	3.7	1.9	9.5	1.8	0.59 U
Dioxin Furans (ng/kg)					
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.085 U	0.159 U	0.164 U	0.369 U	0.075 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.127 U	0.065 U	0.102 U	1.13 J	0.101 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.156 U	0.106 U	0.062 U	0.505 J	0.093 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-PJ	PG-PJ	PG-PJ	PG-SMA3	PG-SMA3
Location ID	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-SMA3_InSitu	PG-SMA3_InSitu
Sample ID	PG-PJ-MAN-COC-170427	PG-PJ-MUS-COC-170427	PG-PJ-OYS-COC-170427	PG-SMA3-DUNH-COC-170426	PG-SMA3-DUNM-COC-170426
Sample Date	4/27/2017	4/27/2017	4/27/2017	4/26/2017	4/26/2017
X	1213132.38	1213132.38	1213132.38	1212681.47	1212681.47
Y	316435.36	316435.36	316435.36	308268.92	308268.92
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.1 U	0.116 U	0.092 U	2.95 J	0.098 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.284 J	0.122 U	0.111 J	0.43 J	0.105 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	1.35 J	0.565 U	0.435 U	3.56 J	0.267 U
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	14.5	3.73 U	2.91 U	2.01 U	1.94 U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	0 U	0.159 J	0.942 J	2.3	0 U
Total Pentachlorodibenzo-p-dioxin (PeCDD)	0 U	0 U	0.593	4.3	0 U
Total Hexachlorodibenzo-p-dioxin (HxCDD)	0.734 J	0.151 J	0.768 J	10.5	0 U
Total Heptachlorodibenzo-p-dioxin (HpCDD)	5.61	2.08 J	1.58 J	7.86	0.805 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.056 U	0.033 U	0.202 U	2.06	0.042 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.117 UJ	0.05 U	0.076 U	0.396 U	0.086 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.103 U	0.046 U	0.044 U	0.793 J	0.08 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.091 U	0.032 U	0.046 U	0.416 U	0.066 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.087 U	0.033 U	0.08 U	0.227 U	0.064 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.152 UJ	0.045 U	0.107 U	0.2 U	0.097 UJ
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.102 U	0.034 U	0.06 U	0.204 U	0.07 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.51 UJ	0.118 U	0.141 U	1.2 J	0.073 UJ
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.152 UJ	0.055 U	0.085 U	0.09 U	0.12 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	1.36 U	0.132 U	0.28 U	0.154 U	0.345 U
Total Tetrachlorodibenzofuran (TCDF)	0 U	0.083 J	2.13	10.7	0.042 J
Total Pentachlorodibenzofuran (PeCDF)	0 UJ	0.199 J	1.2	8.43	0 U
Total Hexachlorodibenzofuran (HxCDF)	0.243 J	0.061 J	0.51 J	5.88	0.097 J
Total Heptachlorodibenzofuran (HpCDF)	0.976 J	0.262 J	0.256 J	1.44	0 UJ
Total Dioxin/Furan (U = 1/2)	18 J	3.7 U	2.6 J	15 J	1.9 UJ
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	0.21 J	0.16 U	0.19 J	2.3 J	0.1 UJ
Total Dioxin/Furan (U = 0)	16 J	3.7 U	0.11 J	13 J	1.9 UJ
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	0.046 J	0.16 U	0.011 J	2 J	0.1 UJ
PCB Congeners (ng/kg)					
PCB-001	1.2 U	0.24 U	1.1 U	2.2 U	0.87 U
PCB-002	0.94 U	0.24 U	0.92 U	1.8 U	0.71 U
PCB-003	1.1 U	0.29 U	1.1 U	2.1 U	0.87 U
PCB-004	19 U	0.55 U	14 U	15 U	3.1 U
PCB-005	19 U	0.19 U	22 U	9.2 U	2.3 U
PCB-006	15 U	0.16 U	17 U	7.4 U	1.9 U
PCB-007	16 U	0.16 U	18 U	7.5 U	1.9 U
PCB-008	14 U	1.18 J	15 U	9.3 J	1.7 U
PCB-009	16 U	0.15 U	18 U	7.5 U	1.9 U
PCB-010	20 U	0.55 U	14 U	15 U	3.2 U
PCB-011	16 U	8.08 U	18 U	12.7 U	3.4 U
PCB-012/013	17 U	0.16 U	19 U	7.9 U	2 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-PJ	PG-PJ	PG-PJ	PG-SMA3	PG-SMA3
Location ID	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-SMA3_InSitu	PG-SMA3_InSitu
Sample ID	PG-PJ-MAN-COC-170427	PG-PJ-MUS-COC-170427	PG-PJ-OYS-COC-170427	PG-SMA3-DUNH-COC-170426	PG-SMA3-DUNM-COC-170426
Sample Date	4/27/2017	4/27/2017	4/27/2017	4/26/2017	4/26/2017
X	1213132.38	1213132.38	1213132.38	1212681.47	1212681.47
Y	316435.36	316435.36	316435.36	308268.92	308268.92
PCB-014	15 U	0.16 U	17 U	7.3 U	1.8 U
PCB-015	27 U	1.1 U	31 U	31	7.3 U
PCB-016	34 U	0.9 J	20 U	32 U	6.9 U
PCB-017	26 U	0.79 U	16 U	32	5.3 U
PCB-018/030	21 U	1.8 U	12 U	39	4.2 U
PCB-019	19 U	0.6 U	11 U	18 U	3.8 U
PCB-020/028	4.7 U	6.14 U	12.9 U	726	52.7 U
PCB-021/033	2.5 U	2.2 J	4.6 U	22.6	2.2 U
PCB-022	2.5 U	1.1 U	4.6 U	64.7 U	5 U
PCB-023	2.5 U	0.21 U	4.5 U	3.9 U	2.2 U
PCB-024	18 U	0.58 U	11 U	17 U	3.7 U
PCB-025	2.3 U	0.36 U	4.3 U	10.4	2.1 U
PCB-026/029	2.2 U	0.79 J	4.1 U	22	2 U
PCB-027	18 U	0.52 U	11 U	17 U	3.7 U
PCB-031	5.5 J	3.58 J	7.6 J	239	15.3
PCB-032	17 U	0.59 U	9.8 U	62	3.3 U
PCB-034	2.3 U	0.21 U	4.2 U	3.6 U	2.1 U
PCB-035	2.4 U	0.49 U	4.4 U	3.8 U	2.2 U
PCB-036	2 U	0.36 J	3.7 U	3.2 U	1.8 U
PCB-037	4.2 U	1.1 U	7.7 U	60.9	11 U
PCB-038	2.5 U	0.19 U	4.7 U	4 U	2.3 U
PCB-039	2.2 U	0.19 U	4.2 U	3.6 U	2 U
PCB-040/041/071	7.2 U	4.62 J	12 J	208	8.9 J
PCB-042	8.3 U	2.47 J	12 U	229	7 J
PCB-043	9.6 U	0.63 U	14 U	33	7.4 U
PCB-044/047/065	11 U	17.6 U	35.4 U	1010 U	39.5 U
PCB-045/051	7.1 U	1.2 U	10 U	17 J	5.4 U
PCB-046	8.7 U	0.56 U	13 U	13 U	6.7 U
PCB-048	7.1 U	1.8 U	10 U	93	5.4 U
PCB-049/069	8.4 J	5.87 J	19 U	772	22.4
PCB-050/053	6.7 U	1.2 U	9.7 U	14.1 J	5.1 U
PCB-052	9.3 U	16.3 U	40.7 U	1900	57.2 U
PCB-054	1.1 U	0.25 U	1.4 U	2 U	1 U
PCB-055	4 U	0.56 U	6.7 U	9.6 U	2.4 U
PCB-056	3.9 U	2.1 J	7.5 J	65.5	3.2 J
PCB-057	3.4 U	0.53 U	5.7 U	8.2 U	2 U
PCB-058	3.5 U	0.54 U	5.9 U	8.4 U	2.1 U
PCB-059/062/075	5.2 U	0.86 J	7.5 U	86.8	4 U
PCB-060	4.3 U	1.92 J	7.1 U	116	7.2 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task Location Name Location ID Sample ID Sample Date X Y	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-MAN-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-MUS-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-OYS-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-SMA3 PG-SMA3_InSitu PG-SMA3-DUNH-COC-170426 4/26/2017 1212681.47 308268.92	2017Shellfish1 PG-SMA3 PG-SMA3_InSitu PG-SMA3-DUNM-COC-170426 4/26/2017 1212681.47 308268.92
PCB-061/070/074/076	10 U	18.2 U	48.2 U	884	52.2 U
PCB-063	3.4 U	0.5 U	5.7 U	36	2 U
PCB-064	5.7 U	2.32 J	10 U	552	19
PCB-066/095	3.6 U	8.74 U	22.6 U	478	26.9 U
PCB-067	3.3 U	0.52 U	5.5 U	8.1 J	1.9 U
PCB-068	3.1 U	2.32 U	5.2 U	13.6 U	2 U
PCB-072	3.1 U	0.51 U	5.2 U	19.4	1.8 U
PCB-073	4.9 U	0.32 U	7.2 U	7.3 U	3.8 U
PCB-077	5.1 U	1.29 J	8.5 U	40	3 U
PCB-078	4 U	0.5 U	6.6 U	9.5 U	2.3 U
PCB-079	3.4 U	0.46 U	5.7 U	16.4	2 U
PCB-080	3.5 U	0.48 U	5.8 U	8.4 U	2.1 U
PCB-081	5 U	0.7 U	8.4 U	12 U	3 U
PCB-082	7.6 U	2 U	11 U	78	6.2 U
PCB-083/099	13.5 J	31.6	89.8	4610	167
PCB-084	7.1 U	4.15 J	13	158	5.8 U
PCB-085/116/117	5.3 U	7.21 U	15 U	798	28.9 U
PCB-086/087/097/109/119/125	5.2 U	17.8 J	51.2 J	1050	42.1 J
PCB-088/091	6 U	2 U	11.1 J	312	8.9 J
PCB-089	6.4 U	0.24 U	9.3 U	13 U	5.2 U
PCB-090/101/113	23 J	40.3	114	4300	141
PCB-092	6.5 U	7.96 J	20.6	766	23.5
PCB-093/095/098/100/102	5.8 U	1.67 J	8.6 U	54	4.8 U
PCB-094	6.3 U	0.25 U	9.2 U	13 U	5.2 U
PCB-095	8.5 J	19.2	54.3	1090	29.6
PCB-096	0.43 U	0.39 U	1.1 U	3.8 U	1.7 U
PCB-103	5 U	0.4 U	7.3 U	43	4.1 U
PCB-104	0.35 U	0.27 U	0.88 U	3.1 U	1.4 U
PCB-105	5.7 U	14.7 U	30.7 U	996	43.8 U
PCB-106	3.9 U	0.087 U	5 U	7.5 U	1.1 U
PCB-107	3.3 U	2.95 J	9.1 J	241	9.34 J
PCB-108/124	3.6 U	1.24 J	4.6 U	67.9	2.4 J
PCB-110/115	14 U	30.5 U	95.4 U	2230	70.8 U
PCB-111	4.6 U	0.17 U	6.7 U	9.6 U	3.8 U
PCB-112	4.7 U	0.18 U	6.9 U	9.9 U	3.9 U
PCB-114	4.4 U	0.46 U	5.6 U	55.1	2.7 J
PCB-118	15 U	37.6 U	96.3 U	2990	122 U
PCB-120	4.3 U	0.28 J	6.3 U	9 U	3.6 U
PCB-121	4.5 U	0.17 U	6.6 U	9.4 U	3.7 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task Location Name Location ID Sample ID Sample Date X Y	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-MAN-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-MUS-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-PJ PG-PJ_InSitu PG-PJ-OYS-COC-170427 4/27/2017 1213132.38 316435.36	2017Shellfish1 PG-SMA3 PG-SMA3_InSitu PG-SMA3-DUNH-COC-170426 4/26/2017 1212681.47 308268.92	2017Shellfish1 PG-SMA3 PG-SMA3_InSitu PG-SMA3-DUNM-COC-170426 4/26/2017 1212681.47 308268.92
PCB-122	3.9 U	0.236 J	5 U	9.1 J	1.1 U
PCB-123	4.9 U	0.19 U	6.3 U	23 U	1.4 U
PCB-126	4.1 U	0.12 U	5.3 U	8 U	1.2 U
PCB-127	3.6 U	0.077 U	4.6 U	6.9 U	1 U
PCB-128/166	14 U	12.4 J	14 U	1330	54.6
PCB-129/138/163	45 U	97.1 U	180 U	16600	555 U
PCB-130	18 U	5.34 J	17 U	657	24.5
PCB-131	20 U	0.49 U	20 U	44	8.5 U
PCB-132	19 U	13.5	51	1170	30 U
PCB-133	16 U	2.4 J	16 U	343	10.9
PCB-134/143	18 U	3.53 J	18 U	159	7.7 U
PCB-135/151	10 U	27.3	71	2440	67.8
PCB-136	6.8 U	6.33 J	13	267	8.1 J
PCB-137	17 U	1.44 J	16 U	384	12.6
PCB-139/140	15 U	1.83 J	15 U	131	6.2 U
PCB-141	17 U	2.63 J	17 U	764	22.5
PCB-142	18 U	0.43 U	17 U	23 U	7.5 U
PCB-144	9.4 U	2.93 J	14 U	180	5.9 U
PCB-145	7.5 U	0.32 U	11 U	11 U	3.7 U
PCB-146	14 U	21.5	49	2960	87.4
PCB-147/149	21	66.3	178	6520	205
PCB-148	9.3 U	0.39 U	14 U	14 U	4.5 U
PCB-150	6.8 U	0.32 U	10 U	21	3.3 U
PCB-152	6.8 U	0.28 U	10 U	10 U	3.3 U
PCB-153/168	43 U	129 U	325 U	18000	574 U
PCB-154	8.2 U	2.88 J	12 U	258	8.4 J
PCB-155	5.9 U	0.21 U	8.8 U	8.8 U	2.9 U
PCB-156/157	4.4 U	5.02 J	5.5 J	591	24.1
PCB-158	11 U	6.46 J	11 U	590	21.6
PCB-159	3.7 U	0.23 U	2.3 U	34	4.3 U
PCB-160	13 U	0.33 U	12 U	17 U	5.3 U
PCB-161	12 U	0.3 U	11 U	15 U	4.9 U
PCB-162	3.7 U	0.4 U	2.3 U	23 U	4.3 U
PCB-164	11 U	2.32 J	11 U	274	9.5 U
PCB-165	13 U	0.32 U	13 U	26 U	5.4 U
PCB-167	4.2 U	2.66 J	6.5 J	202	7.3 J
PCB-169	4.4 U	0.27 U	2.8 U	18 U	5.1 U
PCB-170	7.5 U	3.89 J	8.9 U	1580	61.5
PCB-171/173	11 U	4.57 J	13 U	602	26.7

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-PJ	PG-PJ	PG-PJ	PG-SMA3	PG-SMA3
Location ID	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-SMA3_InSitu	PG-SMA3_InSitu
Sample ID	PG-PJ-MAN-COC-170427	PG-PJ-MUS-COC-170427	PG-PJ-OYS-COC-170427	PG-SMA3-DUNH-COC-170426	PG-SMA3-DUNM-COC-170426
Sample Date	4/27/2017	4/27/2017	4/27/2017	4/26/2017	4/26/2017
X	1213132.38	1213132.38	1213132.38	1212681.47	1212681.47
Y	316435.36	316435.36	316435.36	308268.92	308268.92
PCB-172	11 U	0.54 U	13 U	329	10.4
PCB-174	10 U	1.81 J	12 U	795	29.2
PCB-175	7.4 U	0.7 U	11 U	69	4.7 U
PCB-176	6.1 U	2.16 J	9.3 U	143	5.3 J
PCB-177	11 U	9.43 J	24	1440	50.1
PCB-178	8.4 U	6.74 J	13 U	991	29.5
PCB-179	5.9 U	8.48 J	16 U	612	17 U
PCB-180/193	11 UJ	16.6 UJ	24 UJ	4430 J	157 UJ
PCB-181	11 U	0.54 U	13 U	41 U	3.9 U
PCB-182	8 U	0.23 U	12 U	16 U	5.1 U
PCB-183	9 U	12.1	19	1760	61.1
PCB-184	5.5 U	0.17 U	8.4 U	11 U	3.5 U
PCB-185	11 U	0.59 U	13 U	42 U	3.9 U
PCB-186	6.2 U	0.18 U	9.5 U	12 U	3.9 U
PCB-187	20	41.8	100	5520	181
PCB-188	6.4 U	0.32 J	9.7 U	26	4.1 U
PCB-189	2.3 U	0.61 J	4.4 U	54	3.6 U
PCB-190	8.4 U	1.19 J	10 U	296	12.7
PCB-191	7.8 U	0.39 U	9.2 U	59	2.8 U
PCB-192	8.8 U	0.44 U	10 U	34 U	3.2 U
PCB-194	9.8 U	1.3 U	3.4 U	700 J	24.2
PCB-195	10 U	0.33 U	3.5 U	242 J	12
PCB-196	18 U	0.96 U	15 U	453 J	15 U
PCB-197	12 U	0.73 U	10 U	69 J	3.7 U
PCB-198/199	19 U	1 U	16 U	1150 J	42.1
PCB-200	14 U	0.78 U	12 U	59 J	4.4 U
PCB-201	12 U	1.4 U	10 U	147 J	6.2 J
PCB-202	14 U	6.51 J	11 U	508 J	18.9
PCB-203	18 U	3.02 J	15 U	654 J	23.3
PCB-204	12 U	0.75 U	10 U	14 UJ	3.9 U
PCB-205	8.1 U	0.31 U	2.8 U	30 U	4.9 U
PCB-206	12 U	1.1 U	3.1 U	392	12.7
PCB-207	9.4 U	0.92 U	2.5 U	36.3	3.8 U
PCB-208	12 U	1.1 U	3.1 U	170 U	6.3 U
PCB-209	25 U	3.41 J	4.4 U	231	13 U
Total PCB Congener (U = 1/2)	850 J	680 J	2000 J	100000 J	2800 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	0.41 U	0.011 J	0.31 J	0.82	0.14 J
Total PCB Congener (U = 0)	100 J	450 J	910 J	100000 J	1700 J
Total PCB Congener TEQ 2005 (Mammal) (U = 0)	0.41 U	0.00038 J	0.00036 J	0.15	0.001 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-PJ	PG-PJ	PG-PJ	PG-SMA3	PG-SMA3
Location ID	PG-PJ_InSitu	PG-PJ_InSitu	PG-PJ_InSitu	PG-SMA3_InSitu	PG-SMA3_InSitu
Sample ID	PG-PJ-MAN-COC-170427	PG-PJ-MUS-COC-170427	PG-PJ-OYS-COC-170427	PG-SMA3-DUNH-COC-170426	PG-SMA3-DUNM-COC-170426
Sample Date	4/27/2017	4/27/2017	4/27/2017	4/26/2017	4/26/2017
X	1213132.38	1213132.38	1213132.38	1212681.47	1212681.47
Y	316435.36	316435.36	316435.36	308268.92	308268.92
Dioxin Furans and PCB Congeners (ng/kg)					
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 1/2)	0.48 J	0.16 J	0.5 J	3.1 J	0.28 J
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 0)	0.046 J	0.00038 J	0.011 J	2.2 J	0.001 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
Conventional Parameters (pct)					
Lipids	1.5	0.9 U	0.68 U	0.7 U	2
Total solids	19.1	13.8	11.5	14.2	13.9
Metals (mg/kg)					
Cadmium	0.219	0.0929	0.392	0.303	1.57
Polycyclic Aromatic Hydrocarbons (µg/kg)					
2-Methylnaphthalene	0.49 U	0.5 U	0.5 U	0.59	0.49 U
Acenaphthene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Acenaphthylene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Anthracene	0.49 U	0.5 U	0.5 U	0.49 U	1.03
Benzo(a)anthracene	0.69	0.5	0.5	2.16	3.86
Benzo(a)pyrene	0.49 U	0.5 U	0.5 U	0.49 U	0.58
Benzo(b)fluoranthene	0.53	0.5 U	0.5 U	0.49 U	3.13
Benzo(e)pyrene	0.79	0.73	0.5 U	0.49 U	2
Benzo(g,h,i)perylene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Benzo(k)fluoranthene	0.49 U	0.5 U	0.5 U	0.49 U	1.52
Chrysene	0.82	0.75	0.5	1.76	5.52
Dibenzo(a,h)anthracene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Fluoranthene	0.78	1.39	1.07	1.65	11.2
Fluorene	0.49 U	0.5 U	0.5 U	0.49 U	0.51
Indeno(1,2,3-c,d)pyrene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Naphthalene	0.59 U	0.6 U	0.6 U	0.59 U	0.51 J
Perylene	0.49 U	0.5 U	0.5 U	0.49 U	0.49 U
Phenanthrene	0.49 U	0.72	0.97	0.87	2.52
Pyrene	0.49 U	0.87	1	1.19	8.68
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 1/2)	0.45	0.41	0.41	0.58	1.5
Total PAH (19) (U = 1/2)	7.1	8.3	7.6	11	43 J
Total HPAH (SMS) (U = 1/2)	4.3	5	4.6	8.2	35
Total LPAH (SMS) (U = 1/2)	0.59 U	2	2.3	2.1	5.1 J
Total PAH (SMS) (U = 1/2)	5.8	7	6.8	10	40 J
Total cPAH TEQ (7 minimum CAEPA 2005) (U = 0)	0.13	0.058	0.055	0.23	1.5
Total PAH (19) (U = 0)	3.6	5	4	8.2	41 J
Total HPAH (SMS) (U = 0)	2.8	3.5	3.1	6.8	34
Total LPAH (SMS) (U = 0)	0.59 U	0.72	0.97	0.87	4.6 J
Total PAH (SMS) (U = 0)	2.8	4.2	4	7.6	39 J
Dioxin Furans (ng/kg)					
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	0.068 U	0.112 U	0.059 U	0.129 U	0.234 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	0.077 U	0.148 U	0.067 U	0.114 U	0.082 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.088 U	0.141 U	0.085 U	0.113 UJ	0.119 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	0.117 U	0.151 U	0.094 U	0.125 U	0.106 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	0.131 J	0.161 U	0.099 U	0.131 U	0.123 U
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	0.565 U	0.715 U	0.269 U	0.184 U	0.252 U
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	5.01 U	4.86 U	1.83 U	2.48 U	1.48 U
Total Tetrachlorodibenzo-p-dioxin (TCDD)	0.093 J	0 U	0.07 J	0 U	2.73
Total Pentachlorodibenzo-p-dioxin (PeCDD)	0.077 J	0 U	0 U	0 U	0.95
Total Hexachlorodibenzo-p-dioxin (HxCDD)	0.672 J	0.158 J	0 U	0 U	0.269 J
Total Heptachlorodibenzo-p-dioxin (HpCDD)	2.44 J	2.74 J	0.847 J	1.24 J	1.11 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	0.18 U	0.067 U	0.046 U	0.098 U	0.351 J
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	0.072 U	0.1 U	0.05 U	0.106 U	0.071 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	0.064 U	0.094 U	0.046 U	0.102 U	0.095 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	0.062 U	0.09 U	0.043 U	0.079 U	0.061 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.078 U	0.088 U	0.043 U	0.079 U	0.063 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	0.109 U	0.126 U	0.077 U	0.113 UJ	0.088 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	0.081 U	0.091 U	0.047 U	0.084 UJ	0.061 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	0.169 U	0.2 U	0.054 U	0.054 UJ	0.075 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	0.099 U	0.162 U	0.075 U	0.135 UJ	0.113 U
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	0.417 U	0.527 U	0.153 U	0.283 U	0.136 U
Total Tetrachlorodibenzofuran (TCDF)	0.43 J	0 U	0 U	0 U	3.45
Total Pentachlorodibenzofuran (PeCDF)	0.124 J	0 U	0 U	0 U	1.47
Total Hexachlorodibenzofuran (HxCDF)	0.12 J	0.09 J	0.116 J	0.113 J	0.137 J
Total Heptachlorodibenzofuran (HpCDF)	0.275 J	0.2 J	0.054 J	0.054 J	0 U
Total Dioxin/Furan (U = 1/2)	3.8 J	4.9 U	1.8 U	2.5 UJ	2 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 1/2)	0.14 J	0.15 U	0.067 U	0.13 UJ	0.26 J
Total Dioxin/Furan (U = 0)	0.13 J	4.9 U	1.8 U	2.5 UJ	0.45 J
Total Dioxin/Furan TEQ 2005 (Mammal) (U = 0)	0.013 J	0.15 U	0.067 U	0.13 UJ	0.064 J
PCB Congeners (ng/kg)					
PCB-001	1.4 U	1 U	1.2 U	1.6 U	0.73 U
PCB-002	1.1 U	0.82 U	1 U	1.3 U	0.64 U
PCB-003	1.4 U	1 U	1.2 U	1.6 U	0.72 U
PCB-004	5.5 U	3.2 U	8.5 J	1.4 U	1.8 U
PCB-005	1.2 U	1.4 U	1.2 U	2.6 U	1.2 U
PCB-006	0.95 U	1.1 U	0.91 U	2.1 U	1.2 U
PCB-007	0.97 U	1.1 U	0.96 U	2.1 U	1.2 U
PCB-008	2.6 U	0.96 U	1.7 U	1.8 U	3.8 J
PCB-009	0.97 U	1.1 U	0.89 U	2.1 U	1.1 U
PCB-010	5.7 U	3.3 U	3.4 U	1.4 U	1.8 U
PCB-011	13 U	13.1 U	8.77 U	9.7 U	13.9 U
PCB-012/013	1 U	1.2 U	0.96 U	2.2 U	1.2 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
PCB-014	0.93 U	1.1 U	0.89 U	2 U	1.2 U
PCB-015	4 U	1.9 U	1.4 U	3.7 U	2.9 J
PCB-016	10 U	6.1 U	2.3 U	19 U	5.5 U
PCB-017	8 U	4.7 U	4.6 J	15 U	5.94 J
PCB-018/030	6.4 U	3.7 U	19.9 J	12 U	12.7 J
PCB-019	5.7 U	3.3 U	1.6 U	11 U	1.45 J
PCB-020/028	32.2 U	8.35 U	4.33 U	6.9 U	46.7 U
PCB-021/033	8 J	3 U	7.92 J	2.6 U	10.1 J
PCB-022	8.9 J	2.2 U	0.71 U	1.8 U	10.1 U
PCB-023	1.5 U	1.1 U	0.62 U	1.8 U	0.28 U
PCB-024	5.6 U	3.2 U	1.5 U	10 U	0.41 U
PCB-025	1.7 J	0.99 U	0.58 U	1.7 U	3.03 J
PCB-026/029	3.8 J	1.04 J	2.1 U	1.6 U	4.45 J
PCB-027	5.6 U	3.3 U	1.4 U	10 U	1.47 J
PCB-031	20.5	3.3 U	4.86 J	7.4 J	27.7
PCB-032	5.1 U	2.9 U	1.3 U	9.3 U	5.43 J
PCB-034	1.4 U	0.98 U	0.6 U	1.6 U	0.26 U
PCB-035	1.4 U	1 U	0.6 U	1.7 U	0.57 U
PCB-036	1.2 U	0.86 U	0.51 U	1.4 U	1.24 J
PCB-037	6.7 U	1.8 U	0.86 U	3 U	9.06 J
PCB-038	1.5 U	1.1 U	0.58 U	1.8 U	0.25 U
PCB-039	1.4 U	0.96 U	0.57 U	1.6 U	0.26 U
PCB-040/041/071	21 J	4.2 U	1.7 J	6.4 U	32
PCB-042	10.2	3.9 U	1.5 U	7.4 U	23.4
PCB-043	2.1 U	4.5 U	1.8 U	8.6 U	2.68 J
PCB-044/047/065	44.2 U	13 U	7.4 U	12.3 U	82.8 U
PCB-045/051	7.8 J	3.3 U	1.3 U	6.3 U	9.42 J
PCB-046	1.9 U	4 U	1.5 U	7.8 U	2.75 J
PCB-048	5.3 J	3.3 U	18	6 U	12.1
PCB-049/069	28.9	4.3 U	5.9 U	8.6 J	62.7
PCB-050/053	4.1 J	3.1 U	1.3 U	6 U	8.1 U
PCB-052	83.2 U	14.7 U	33.4 U	10.4 U	104 U
PCB-054	1.9 U	0.83 U	0.24 U	1.1 U	0.47 U
PCB-055	1.9 U	2.5 U	0.6 U	5.7 U	0.66 U
PCB-056	7.4 J	3.6 J	0.82 J	5.6 U	18.7
PCB-057	1.6 U	2.1 U	0.55 U	4.9 U	0.61 U
PCB-058	3.7 J	2.2 U	0.59 U	5 U	0.68 U
PCB-059/062/075	5.1 J	2.4 U	0.99 U	4.7 U	7.34 J
PCB-060	6 J	2.7 U	0.6 U	6.1 U	14

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
PCB-061/070/074/076	50.8 U	15.2 U	11.6 U	14 U	112 U
PCB-063	1.6 U	2.1 U	0.53 U	4.9 U	3.65 J
PCB-064	26.7	4.2 U	1.1 U	5.1 U	33.7
PCB-066/095	22 U	10.6 U	2.57 U	7.4 U	56.3 U
PCB-067	1.5 U	2.1 U	0.58 U	4.7 U	1.8 J
PCB-068	2.1 U	1.9 U	0.85 U	4.4 U	2.62 U
PCB-072	1.5 U	2 U	0.53 U	4.5 U	1.3 U
PCB-073	1.1 U	2.3 U	0.93 U	4.4 U	0.48 U
PCB-077	3.2 J	3.2 U	0.75 U	7.3 U	6.42 J
PCB-078	1.8 U	2.5 U	0.55 U	5.6 U	0.59 U
PCB-079	1.6 U	2.1 U	0.49 U	4.9 U	2.01 J
PCB-080	1.6 U	2.2 U	0.5 U	5 U	0.55 U
PCB-081	2.3 U	3.1 U	0.74 U	7.2 U	0.81 U
PCB-082	5.2 U	2.5 U	1.5 U	6 U	10.9
PCB-083/099	73	20.2	7.1 J	12.4 J	208
PCB-084	14 U	4.1 U	1.5 U	5.6 U	32.2
PCB-085/116/117	15.5 U	5.8 U	1.8 U	4.2 U	34 U
PCB-086/087/097/109/119/125	45.2 J	12 J	5 J	4.1 U	117
PCB-088/091	13.9 J	2.7 J	1.4 U	4.7 U	29.6
PCB-089	2.8 U	2.1 U	1.4 U	5 U	1.64 J
PCB-090/101/113	164	30.7	78.5	17.1 J	266
PCB-092	30.6	4.8 J	2.8 U	5.1 U	52.3
PCB-093/095/098/100/102	2.6 U	1.9 U	1.4 U	4.6 U	13.9 J
PCB-094	2.8 U	2 U	1.5 U	4.9 U	1.5 J
PCB-095	81.1	12.7	3.5 J	5.5 U	139
PCB-096	4.2 U	1.3 U	0.29 U	0.44 U	1.2 U
PCB-103	2.4 U	1.6 U	1.2 U	3.9 U	4.47 J
PCB-104	3.4 U	1.1 U	0.2 U	0.35 U	0.26 U
PCB-105	29 U	10.7 U	2.72 U	4 U	61.8 U
PCB-106	4 U	2.4 U	0.72 U	1.7 U	0.45 U
PCB-107	10.4	2.6 J	1 J	1.4 U	19.5
PCB-108/124	3.7 U	2.3 U	0.77 U	1.6 U	7.57 J
PCB-110/115	106 U	26.6 U	5.2 U	10.2 U	213 U
PCB-111	2 U	1.5 U	1 U	3.6 U	0.7 J
PCB-112	2.1 U	1.5 U	1.1 U	3.7 U	0.59 U
PCB-114	4.6 U	2.8 U	0.89 U	1.9 U	3.11 J
PCB-118	92.9 U	24.3 U	8.67 U	11.3 U	232 U
PCB-120	1.9 U	1.4 U	0.94 U	3.4 U	2.5 U
PCB-121	2 U	1.5 U	1 U	3.5 U	0.55 U

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
PCB-122	4 U	2.4 U	0.79 U	1.7 U	1.4 U
PCB-123	5.1 U	3.1 U	0.99 U	2.2 U	2.7 J
PCB-126	4.3 U	2.6 U	0.84 U	1.8 U	0.75 U
PCB-127	3.7 U	2.2 U	0.73 U	1.6 U	0.45 U
PCB-128/166	31.7	6.3 U	3.1 J	5.8 U	45.1
PCB-129/138/163	261 U	62.4 U	29.4 U	40.1 U	531 U
PCB-130	19.3	5.9 U	1.9 J	7.4 U	16.6
PCB-131	7.3 U	6.7 U	1.7 U	8.4 U	3.54 J
PCB-132	74.1	11 U	2.8 U	7.8 U	121
PCB-133	6.7 J	5.4 U	1.4 U	6.7 U	15.2
PCB-134/143	12.7 J	6.1 U	1.6 U	7.6 U	17.5 J
PCB-135/151	94.4	14.7 J	4.8 J	7.6 U	210
PCB-136	28.2	3.4 U	0.93 U	5.1 U	45.6
PCB-137	6 U	5.5 U	1.5 U	6.9 U	8.38 J
PCB-139/140	5.4 U	5 U	1.4 U	6.2 U	9.52 J
PCB-141	14	5.6 U	3 J	7 U	19.8
PCB-142	6.5 U	6 U	1.5 U	7.5 U	0.6 U
PCB-144	12 U	4.7 U	1.2 U	7 U	15.6
PCB-145	2.6 U	3.7 U	1 U	5.6 U	0.86 U
PCB-146	65.9	8.8 J	10.3	6 U	133
PCB-147/149	242	38.5	9.8 J	20 U	458
PCB-148	3.2 U	4.6 U	1.2 U	6.9 U	3.7 J
PCB-150	2.4 U	3.4 U	0.91 U	5.1 U	1.9 J
PCB-152	2.3 U	3.4 U	0.93 U	5.1 U	0.76 U
PCB-153/168	333 U	54.1 U	35 U	44.8 U	985 U
PCB-154	2.8 U	4.1 U	1.1 U	6.2 U	22.4
PCB-155	2 U	2.9 U	0.69 U	4.4 U	0.59 U
PCB-156/157	9.5 J	3 J	1.6 J	6.8 U	14.9 J
PCB-158	20	5.2 J	2.2 J	4.5 U	20.1
PCB-159	4.1 U	2.2 U	0.64 U	5.7 U	0.39 U
PCB-160	4.6 U	4.2 U	1.2 U	5.3 U	0.46 U
PCB-161	4.3 U	3.9 U	0.99 U	4.9 U	0.43 U
PCB-162	4.1 U	2.2 U	0.65 U	5.7 U	2.07 J
PCB-164	15 U	3.8 U	1.1 U	4.7 U	23.1
PCB-165	4.7 U	4.3 U	1.1 U	5.4 U	1.9 J
PCB-167	6.4 U	2.5 U	0.75 U	6.4 U	19.6
PCB-169	4.9 U	2.6 U	0.73 U	6.9 U	0.48 U
PCB-170	9.5 U	7.6 J	6.23 J	6.4 U	6.73 J
PCB-171/173	27.3 J	6.7 U	1.9 U	7.1 U	25.9

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
PCB-172	5.5 UJ	6.6 U	1.4 J	7 U	1.7 J
PCB-174	42.2 J	6.7 U	4.86 J	7 J	4.5 J
PCB-175	2.8 UJ	6.4 U	0.98 U	3.6 U	4.22 J
PCB-176	11 UJ	5.2 U	0.75 U	2.9 U	15.9
PCB-177	53.6 J	10.1	5.2 J	7.6 J	91.6
PCB-178	28.3 J	7.2 U	3.9 J	4 U	60.6
PCB-179	39.6 J	5.1 U	1.2 U	2.8 U	60.4
PCB-180/193	59.8 UJ	17 UJ	14.8 UJ	20 UJ	61.8 UJ
PCB-181	5.4 UJ	6.5 U	0.99 U	6.9 U	1.1 U
PCB-182	3 UJ	6.9 U	0.98 U	3.9 U	0.64 U
PCB-183	58.3 J	7.6 J	5.15 J	6.3 U	65.5
PCB-184	2.1 UJ	4.8 U	0.74 U	2.7 U	0.48 U
PCB-185	5.5 UJ	6.6 U	1.1 U	7.1 U	1.2 U
PCB-186	2.4 UJ	5.4 U	0.81 U	3 U	0.53 U
PCB-187	150 J	18.9	17.6	22 U	393
PCB-188	2.4 U	5.5 U	0.74 U	3.1 U	1.7 U
PCB-189	5.7 UJ	2.2 U	1.1 U	3.3 U	0.47 U
PCB-190	8.9 UJ	5.1 U	0.74 U	5.4 U	0.87 U
PCB-191	3.9 UJ	4.7 U	0.74 U	5 U	1.26 J
PCB-192	4.4 UJ	5.3 U	0.82 U	5.7 U	0.95 U
PCB-194	5.4 UJ	7.3 U	3.8 U	6.2 U	1 U
PCB-195	15.5 J	7.6 U	2.4 U	6.4 U	0.6 U
PCB-196	13.7 J	16 U	4.3 U	7.9 U	1.59 J
PCB-197	4.7 UJ	11 U	3.3 U	5.1 U	2.75 J
PCB-198/199	39.8 J	17 U	7.6 J	13.2 J	2.27 J
PCB-200	3.2 UJ	13 U	3.5 U	6.1 U	0.47 U
PCB-201	12.5 J	11 U	3.3 U	5.3 U	9.57 J
PCB-202	24.4 J	12 U	3.4 U	5.9 U	25.2
PCB-203	32.3 J	16 U	4.3 U	7.9 U	0.58 U
PCB-204	2.8 UJ	11 U	3.3 U	5.3 U	0.45 U
PCB-205	4.5 U	6 U	0.51 U	5.1 U	0.56 U
PCB-206	19 U	7.9 U	4.9 U	4.7 U	0.85 U
PCB-207	6.2 U	6.2 U	0.96 U	3.7 U	0.67 U
PCB-208	19 U	7.8 U	2.7 J	4.6 U	0.83 U
PCB-209	37 U	11 U	5.6 U	12 U	1.8 U
Total PCB Congener (U = 1/2)	2500 J	620 J	420 J	550 J	4500 J
Total PCB Congener TEQ 2005 (Mammal) (U = 1/2)	0.29 J	0.17 J	0.053 J	0.21 UJ	0.051 J
Total PCB Congener (U = 0)	1700 J	200 J	250 J	73 J	3200 J
Total PCB Congener TEQ 2005 (Mammal) (U = 0)	0.00061 J	0.00009 J	0.000048 J	0.21 UJ	0.0019 J

Appendix A
Port Gamble In Situ Shellfish and Crab Monitoring Results

Task	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1	2017Shellfish1
Location Name	PG-SMA3	PG-WS	PG-WS	PG-WS	PG-WS
Location ID	PG-SMA3_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu	PG-WS_InSitu
Sample ID	PG-SMA3-GEO-COC-170426	PG-WS-COC-COC-170425	PG-WS-LTN-COC-170424	PG-WS-MAN-COC-170424	PG-WS-OYS-COC-170424
Sample Date	4/26/2017	4/25/2017	4/24/2017	4/24/2017	4/24/2017
X	1212681.47	1210177.34	1210177.34	1210177.34	1210177.34
Y	308268.92	312379.89	312379.89	312379.89	312379.89
Dioxin Furans and PCB Congeners (ng/kg)					
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 1/2)	0.43 J	0.37 J	0.15 J	0.21 UJ	0.31 J
Total Dioxin/Furan and PCB Congener TEQ 2005 (Mammal) (Calculated U = 0)	0.014 J	0.00009 J	0.000048 J	0.21 UJ	0.065 J

Appendix A

Port Gamble In Situ Shellfish and Crab Monitoring Results

Notes:

Bold = Detected result

-- = results not reported or not applicable

µg/kg = micrograms per kilogram

CAEPA = California Environmental Protection Agency

cPAH = carcinogenic polycyclic aromatic hydrocarbon

HPAH = high molecular weight PAH

J = estimated value

LPAH = low molecular weight PAH

mg/kg = milligrams per kilogram

N = normal environmental sample

ng/kg = nanograms per kilogram

PAH = polycyclic aromatic hydrocarbons

PCB = polychlorinated biphenyls

pct = percent

SMS = Sediment Management Standards

TA = tissue matrix

TEQ = Toxic Equivalents Quotient

U = compound analyzed, but not detected above detection limit

UJ = Compound analyzed, but not detected above estimated detection limit

Horizontal coordinate datum is North American Datum 1983 State Plane Washington North FIPS 4601 (US Survey Feet).

Results presented in this table are reported in wet-weight (as-received) basis.

U.S Environmental Protection Agency Stage 2B data validation was completed by Laboratory Data Consultants.

Totals are calculated as the sum of all detected results (U=0). If all results are not detected, the highest limit value is reported as the sum.

Totals are calculated as the sum of all detected results and half of the reporting limit of undetected results (U=1/2). If all results are not detected, the highest limit value is reported as the sum.

Total cPAH TEQ (7 minimum CAEPA 2005) calculation includes benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene and indeno(1,2,3-c,d)pyrene. Per Model Toxics Control Act cleanup

Regulation, Table 708-2 "Toxicity Equivalency Factors for Minimum Required Carcinogenic Polyaromatic Hydrocarbons (cPAHs)" under Washington Administrative Code 173-340-708(e).

Total PAH (19) is the total of 2-methylnaphthalene, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(e)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, perylene, phenanthrene, and pyrene.

Total HPAH (SMS) is the total of benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, indeno(1,2,3-c,d)pyrene, and pyrene.

Total LPAH (SMS) is the total of acenaphthene, acenaphthylene, anthracene, fluorene, naphthalene, and phenanthrene. 2-Methylnaphthalene is not included in the sum of LPAHs.

Total PAH (SMS) is the total of acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(x)fluoranthenes, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, and pyrene. 2-Methylnaphthalene is not included.

Total PCB congeners is the sum of all PCB congeners listed in this table.

Total dioxin/furan is the sum of all individual dioxin/furans (non-homolog) listed in this table.

Dioxin/furan and PCB TEQ values were calculated with 2005 World Health Organization toxic equivalency factor values for mammals.

Appendix B

Laboratory Reports

Appendix C
Data Validation Reports
