

Result : Analysis Report

Attached page 28

Sample Details

Sample ID : WPWB-1D1_1

Measured : 20 มิถุนายน 2565 15:12:52

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:12:54

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

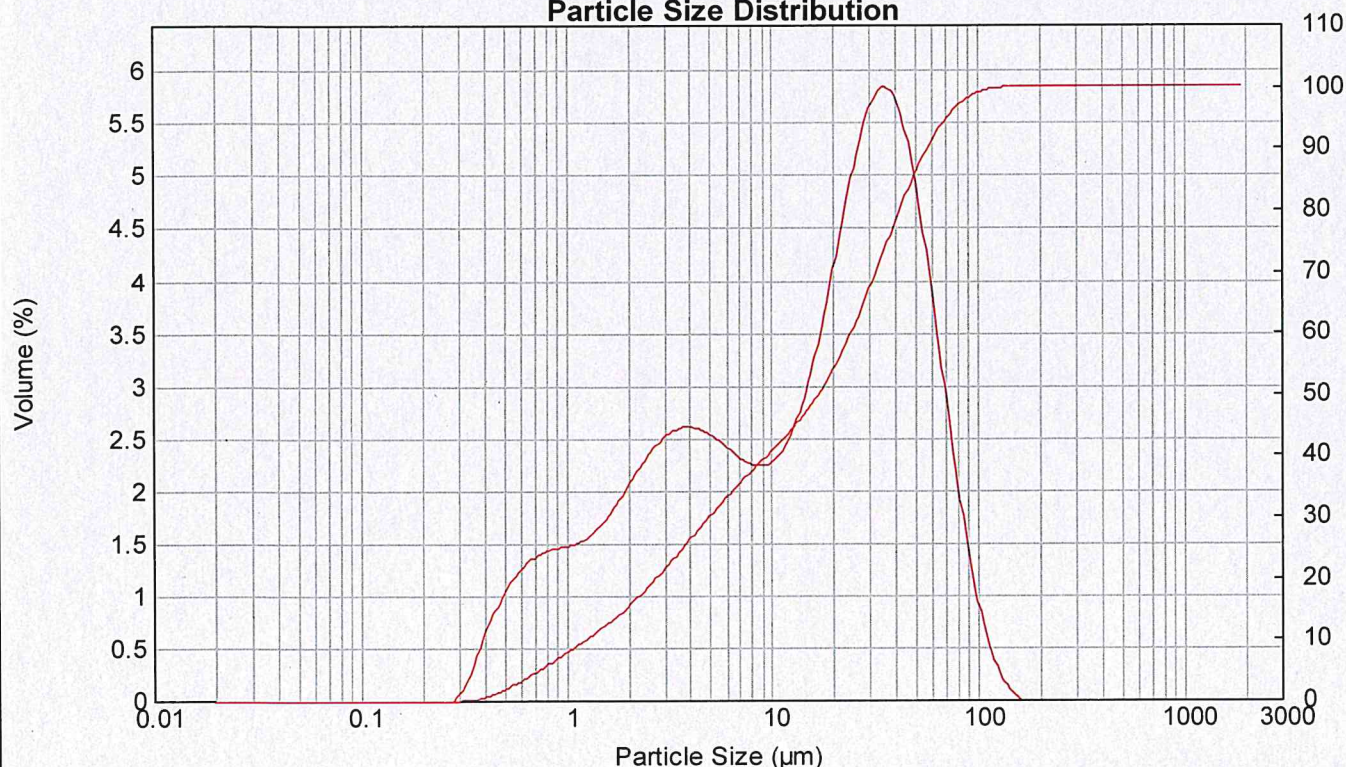
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.04 Residual (%) : 0.441
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0140 %Vol Specific Surface Area : 1.58 m²/g
Mean Diameters : D (0.1) : 1.27 um D (0.5) : 17.19 um D (0.9) : 57.98 um
D [4,3] : 24.11 um D [3,2] : 3.81 um Span : 3.300 Uniformity : 1.09

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.51	7.962	2.24	58.573	3.66	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.60	9.283	2.27	68.291	2.66	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.74	10.823	2.42	79.621	1.74	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.93	12.619	2.71	92.832	1.00	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.14	14.713	3.15	108.234	0.49	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.33	17.154	3.73	126.191	0.17	928.318	0.00
0.050	0.00	0.370	0.60	2.719	2.49	20.000	4.40	147.128	0.02	1082.339	0.00
0.059	0.00	0.431	0.88	3.170	2.59	23.318	5.05	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.12	3.696	2.62	27.187	5.57	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.29	4.309	2.50	31.698	5.77	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.39	5.024	2.40	36.957	5.34	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.44	5.857	2.30	43.089	4.60	316.979	0.00		
0.126	0.00	0.928	1.47	6.829		50.238		369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

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Sample Details

Sample ID : WPWB-1D1_2

Measured : 20 มิถุนายน 2565 15:14:12

Sample File : C:\Users\001827\Desktop\งานบริการ\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:14:13

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

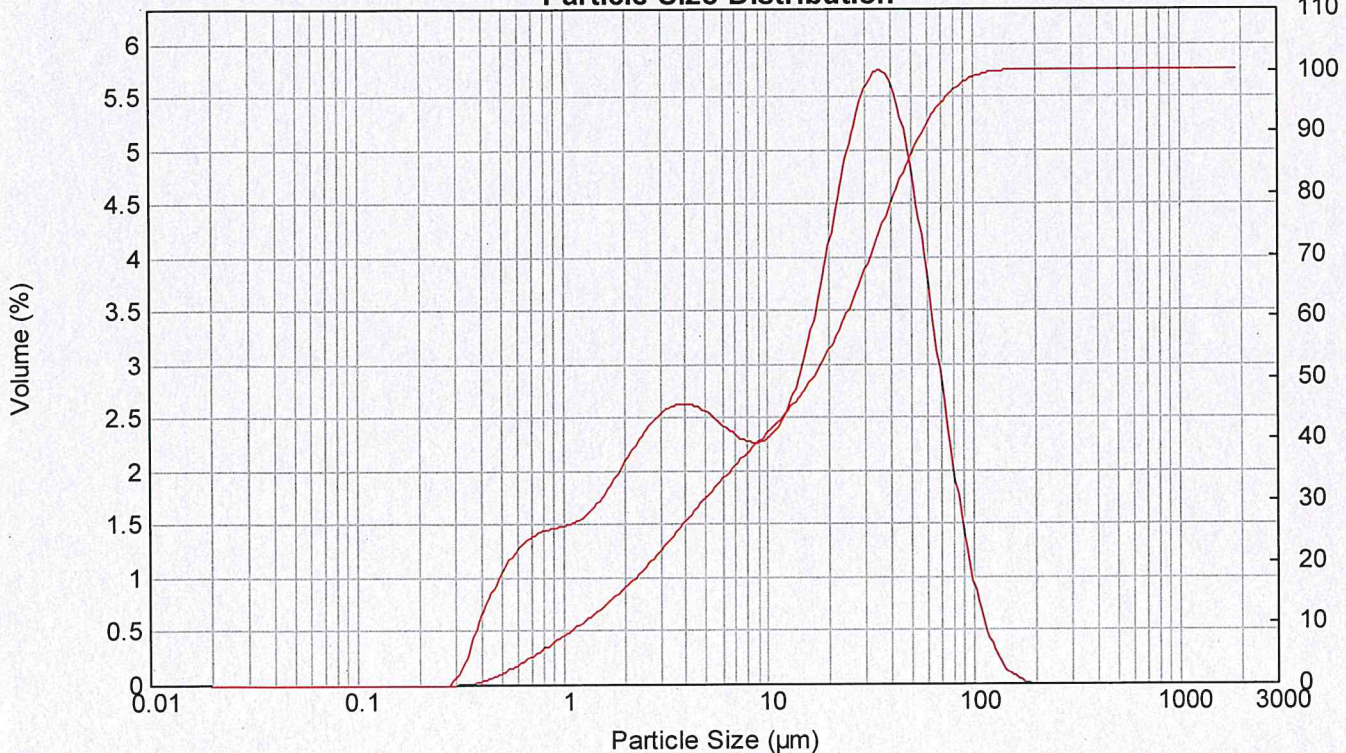
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.69 Residual (%) : 0.432
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0136 %Vol Specific Surface Area : 1.58 m²/g
Mean Diameters : D (0.1) : 1.26 um D (0.5) : 16.86 um D (0.9) : 58.12 um
D [4,3] : 24.1 um D [3,2] : 3.79 um Span : 3.373 Uniformity : 1.12

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.52	7.962	2.27	58.573	3.58	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.61	9.283	2.30	68.291	2.62	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.75	10.823	2.45	79.621	1.74	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.94	12.619	2.74	92.832	1.03	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.16	14.713	3.18	108.234	0.52	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.35	17.154	3.75	126.191	0.22	928.318	0.00
0.050	0.00	0.370	0.60	2.719	2.51	20.000	4.40	147.128	0.08	1082.339	0.00
0.059	0.00	0.431	0.88	3.170	2.61	23.318	5.02	171.539	0.01	1261.915	0.00
0.068	0.00	0.502	1.12	3.696	2.64	27.187	5.51	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.29	4.309	2.61	31.698	5.75	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.40	5.024	2.53	36.957	5.66	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.45	5.857	2.42	43.089	5.22	316.979	0.00		
0.126	0.00	0.928	1.48	6.829	2.33	50.238	4.49	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 30

Sample Details

Sample ID : WPWB-1D1_3

Measured : 20 มิถุนายน 2565 15:15:31

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:15:33

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

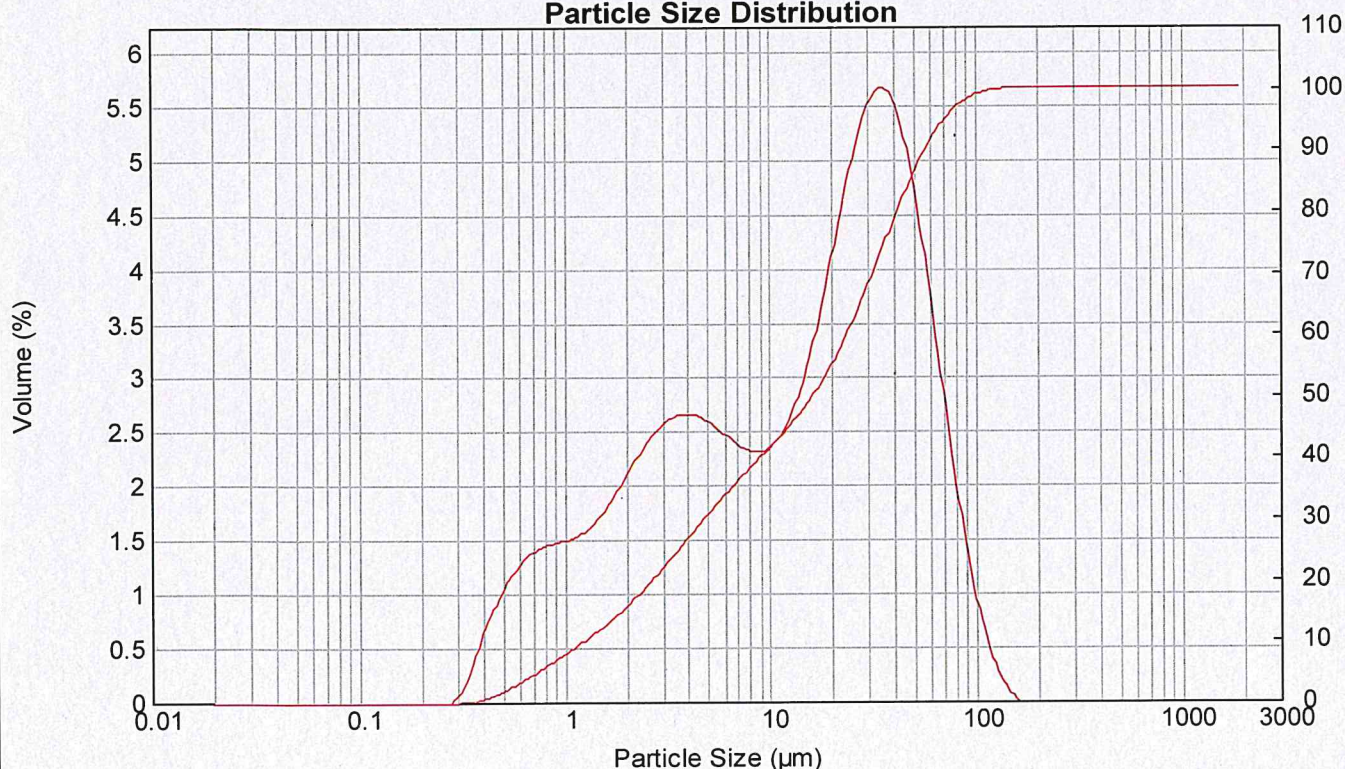
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.44 Residual (%) : 0.449
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0133 %Vol Specific Surface Area : 1.6 m²/g
Mean Diameters : D (0.1) : 1.25 um D (0.5) : 16.31 um D (0.9) : 57.48 um
D [4,3] : 23.67 um D [3,2] : 3.75 um Span : 3.448 Uniformity : 1.14

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.54	7.962	2.32	58.573	3.51	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.63	9.283	2.36	68.291	2.57	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.77	10.823	2.50	79.621	1.70	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.97	12.619	2.79	92.832	1.00	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.19	14.713	3.22	108.234	0.51	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.39	17.154	3.77	126.191	0.19	928.318	0.00
0.050	0.00	0.370	0.61	2.719	2.55	20.000	4.39	147.128	0.02	1082.339	0.00
0.059	0.00	0.431	0.89	3.170	2.64	23.318	4.99	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.13	3.696	2.67	27.187	5.45	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.30	4.309	2.64	31.698	5.67	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.41	5.024	2.57	36.957	5.57	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.46	5.857	2.46	43.089	5.13	316.979	0.00		
0.126	0.00	0.928	1.50	6.829	2.37	50.238	4.41	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

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Sample Details

Sample ID : WPWB-1D2_1

Measured : 20 มิถุนายน 2565 15:31:02

Sample File : C:\Users\001827\Desktop\งาน\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:31:03

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

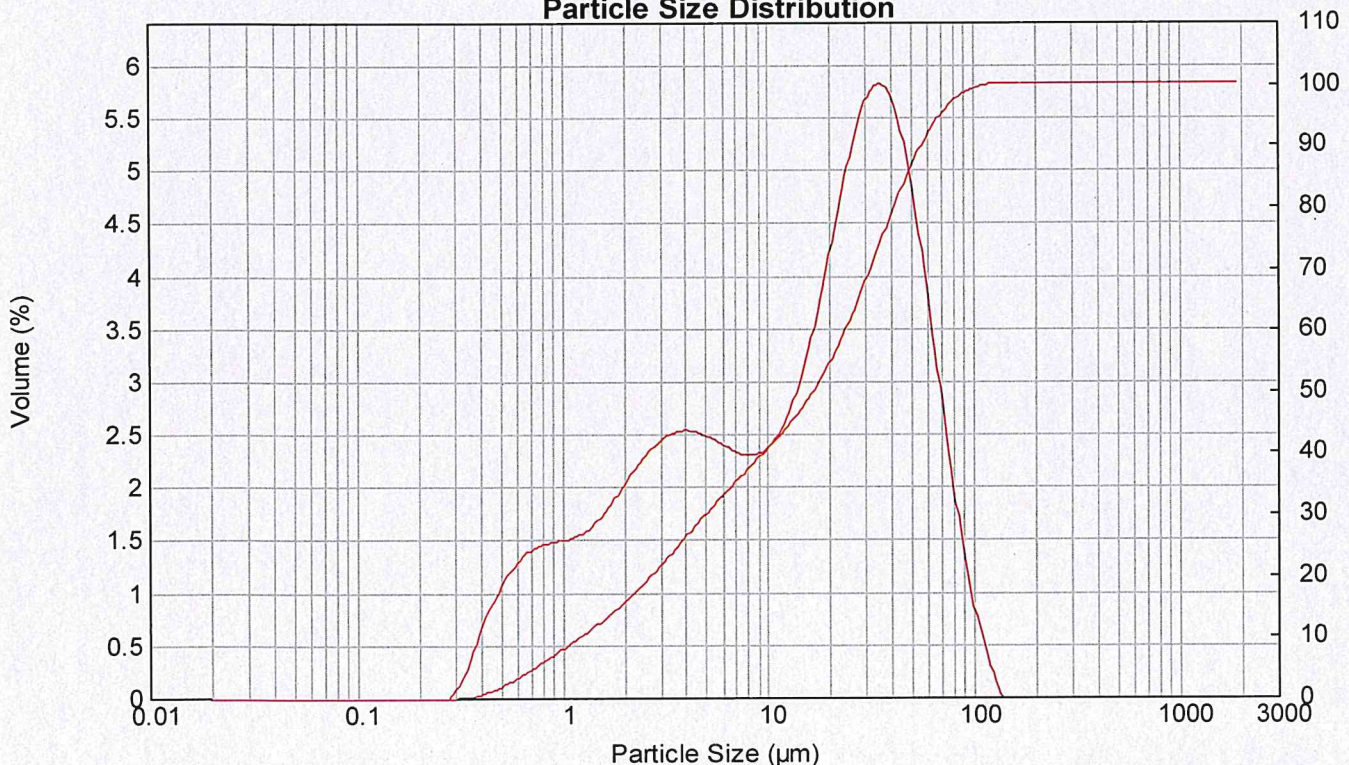
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.01 Residual (%) : 0.424
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0139 %Vol Specific Surface Area : 1.59 m²/g
Mean Diameters : D (0.1) : 1.24 um D (0.5) : 16.91 um D (0.9) : 57.02 um
D [4,3] : 23.66 um D [3,2] : 3.77 um Span : 3.298 Uniformity : 1.08

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.53	7.962	2.31	58.573	3.59	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.60	9.283	2.37	68.291	2.60	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.73	10.823	2.54	79.621	1.68	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.91	12.619	2.84	92.832	0.93	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.10	14.713	3.28	108.234	0.44	796.214	0.00
0.043	0.00	0.317	0.24	2.332	2.28	17.154	3.85	126.191	0.03	928.318	0.00
0.050	0.00	0.370	0.62	2.719	2.42	20.000	4.48	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.90	3.170	2.51	23.318	5.10	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.15	3.696	2.55	27.187	5.59	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.32	4.309	2.53	31.698	5.82	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.42	5.024	2.47	36.957	5.73	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.47	5.857	2.39	43.089	5.29	316.979	0.00		
0.126	0.00	0.928	1.50	6.829	2.33	50.238	4.54	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

Attached page 32

Sample Details

Sample ID : WPWB-1D2_2

Measured : 20 มิถุนายน 2565 15:32:05

Sample File : C:\Users\001827\Desktop\งานทางเทคนิค\service\Tetra
MTEC0884_65_151-162 of 182\Tetra

Analysed : 20 มิถุนายน 2565 15:32:07

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

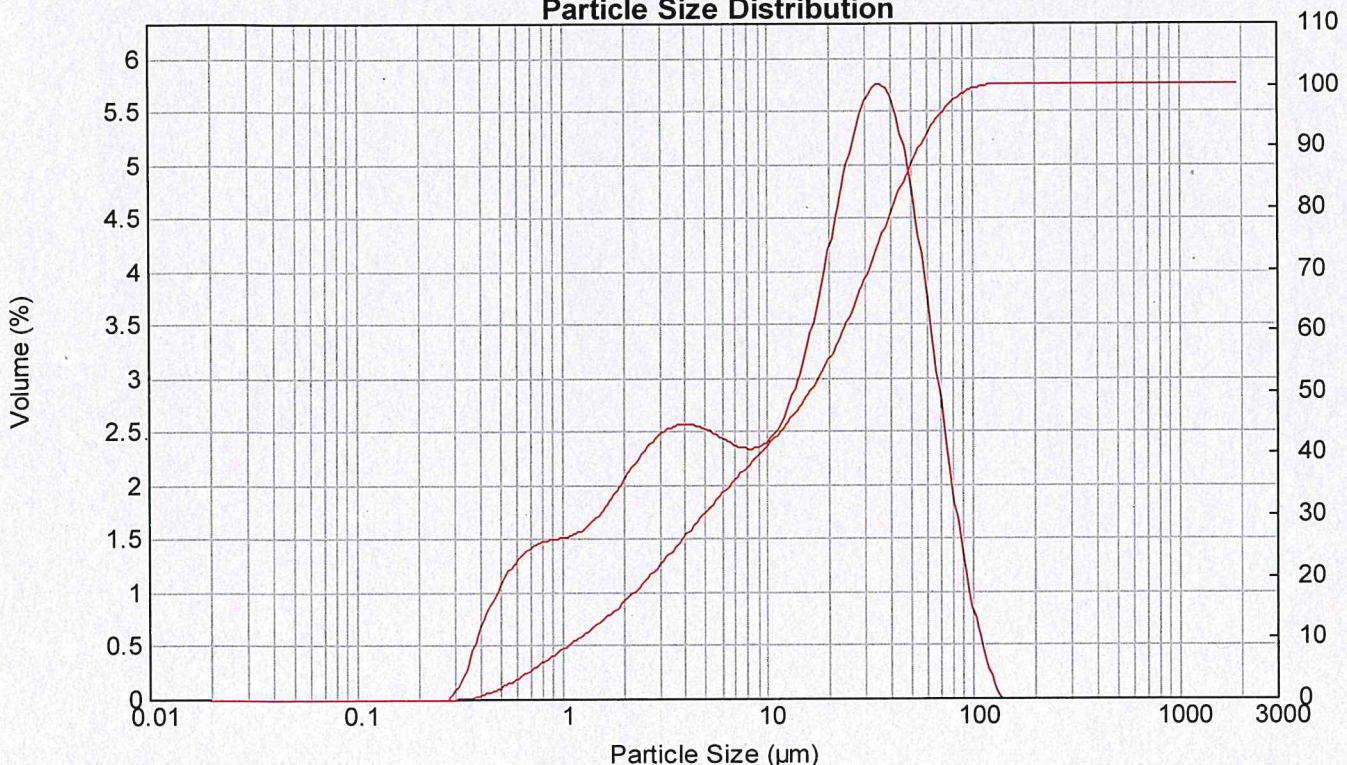
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.73 Residual (%) : 0.423
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0136 %Vol Specific Surface Area : 1.61 m²/g
Mean Diameters : D (0.1) : 1.23 um D (0.5) : 16.48 um D (0.9) : 56.64 um
D [4,3] : 23.39 um D [3,2] : 3.73 um Span : 3.361 Uniformity : 1.1

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.55	7.962	2.35	58.573	3.54	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.62	9.283	2.40	68.291	2.56	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.75	10.823	2.57	79.621	1.66	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.93	12.619	2.86	92.832	0.91	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.12	14.713	3.29	108.234	0.40	796.214	0.00
0.043	0.00	0.317	0.24	2.332	2.30	17.154	3.85	126.191	0.03	928.318	0.00
0.050	0.00	0.370	0.63	2.719	2.45	20.000	4.47	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.91	3.170	2.54	23.318	5.07	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.16	3.696	2.58	27.187	5.53	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.33	4.309	2.56	31.698	5.75	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.43	5.024	2.51	36.957	5.65	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.49	5.857	2.43	43.089	5.21	316.979	0.00		
0.126	0.00	0.928	1.51	6.829	2.37	50.238	4.47	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 33

Sample Details

Sample ID : WPWB-1D2_3

Measured : 20 มิถุนายน 2565 15:34:12

Sample File : C:\Users\001827\Desktop\งานทางเทคนิค\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:34:14

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

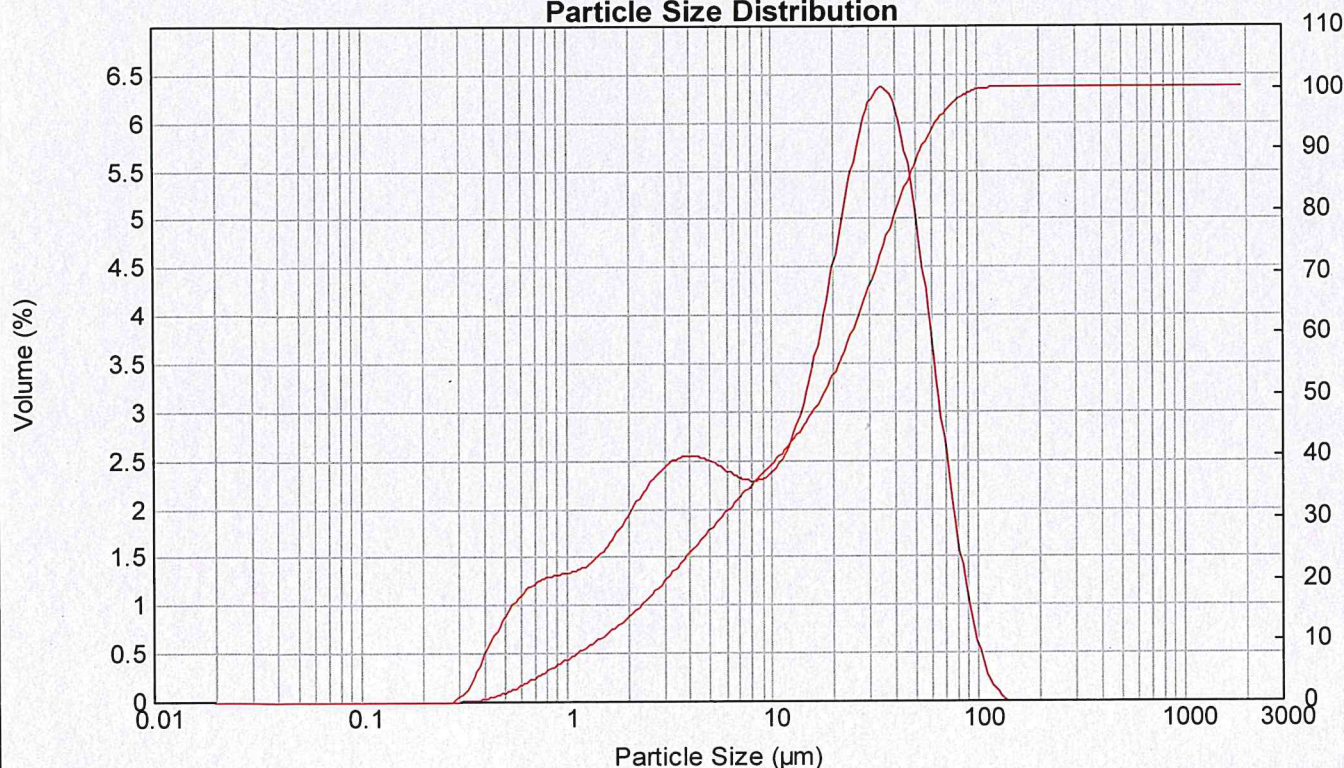
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.38 Residual (%) : 0.931
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0145 %Vol Specific Surface Area : 1.43 m²/g
Mean Diameters : D (0.1) : 1.45 um D (0.5) : 18.23 um D (0.9) : 54.85 um
D [4,3] : 23.61 um D [3,2] : 4.19 um Span : 2.929 Uniformity : 0.964

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.37	7.962	2.30	58.573	3.49	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.46	9.283	2.36	68.291	2.36	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.60	10.823	2.55	79.621	1.38	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.80	12.619	2.90	92.832	0.68	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.02	14.713	3.40	108.234	0.21	796.214	0.00
0.043	0.00	0.317	0.14	2.332	2.23	17.154	4.06	126.191	0.02	928.318	0.00
0.050	0.00	0.370	0.46	2.719	2.40	20.000	4.82	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.72	3.170	2.51	23.318	5.55	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.96	3.696	2.55	27.187	6.12	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.14	4.309	2.54	31.698	6.38	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.25	5.024	2.47	36.957	6.21	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.31	5.857	2.39	43.089	5.60	316.979	0.00		
0.126	0.00	0.928	1.34	6.829	2.32	50.238	4.64	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 34

Sample Details

Sample ID : WPWB-1D3_1

Measured : 20 มิถุนายน 2565 15:54:55

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:54:56

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

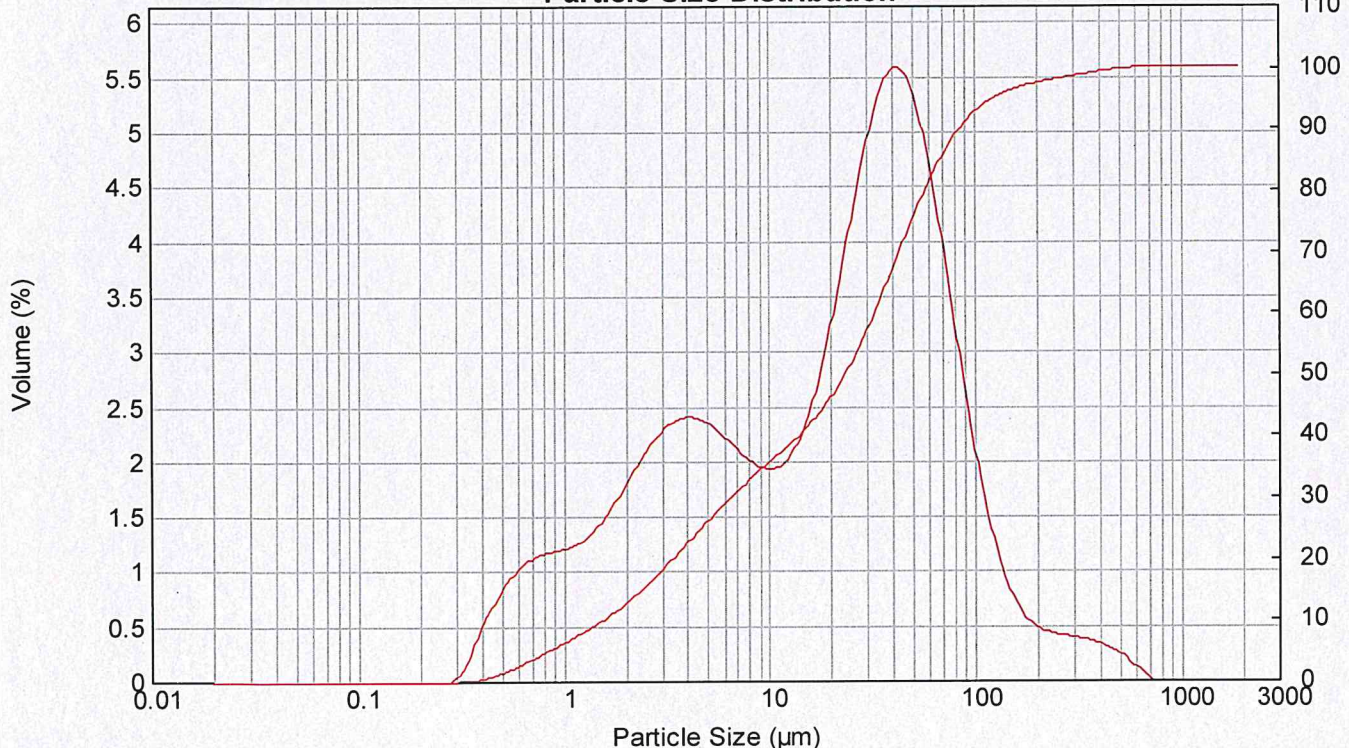
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 21.00 Residual (%) : 0.357
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0172 %Vol Specific Surface Area : 1.33 m²/g
Mean Diameters : D (0.1) : 1.57 um D (0.5) : 23.81 um D (0.9) : 86.02 um
D [4,3] : 40.34 um D [3,2] : 4.52 um Span : 3.546 Uniformity : 1.38

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.25	7.962	1.99	58.573	4.56	430.887	0.29
0.023	0.00	0.172	0.00	1.262	1.34	9.283	1.94	68.291	3.78	502.377	0.21
0.027	0.00	0.200	0.00	1.471	1.48	10.823	1.98	79.621	2.95	585.729	0.11
0.032	0.00	0.233	0.00	1.715	1.67	12.619	2.14	92.832	2.17	682.910	0.01
0.037	0.00	0.272	0.01	2.000	1.88	14.713	2.45	108.234	1.53	796.214	0.00
0.043	0.00	0.317	0.15	2.332	2.08	17.154	2.91	126.191	1.04	928.318	0.00
0.050	0.00	0.370	0.47	2.719	2.25	20.000	3.51	147.128	0.73	1082.339	0.00
0.059	0.00	0.431	0.70	3.170	2.36	23.318	4.17	171.539	0.55	1261.915	0.00
0.068	0.00	0.502	0.90	3.696	2.41	27.187	4.81	200.000	0.46	1471.285	0.00
0.080	0.00	0.586	1.04	4.309	2.39	31.698	5.32	233.183	0.42	1715.392	0.00
0.093	0.00	0.683	1.13	5.024	2.32	36.957	5.58	271.871	0.40	2000.000	0.00
0.108	0.00	0.796	1.18	5.857	2.21	43.089	5.54	316.979	0.38		
0.126	0.00	0.928	1.21	6.829	2.09	50.238	5.18	369.570	0.34		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 35

Sample Details

Sample ID : WPWB-1D3_2

Measured : 20 มิถุนายน 2565 15:56:14

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:56:15

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

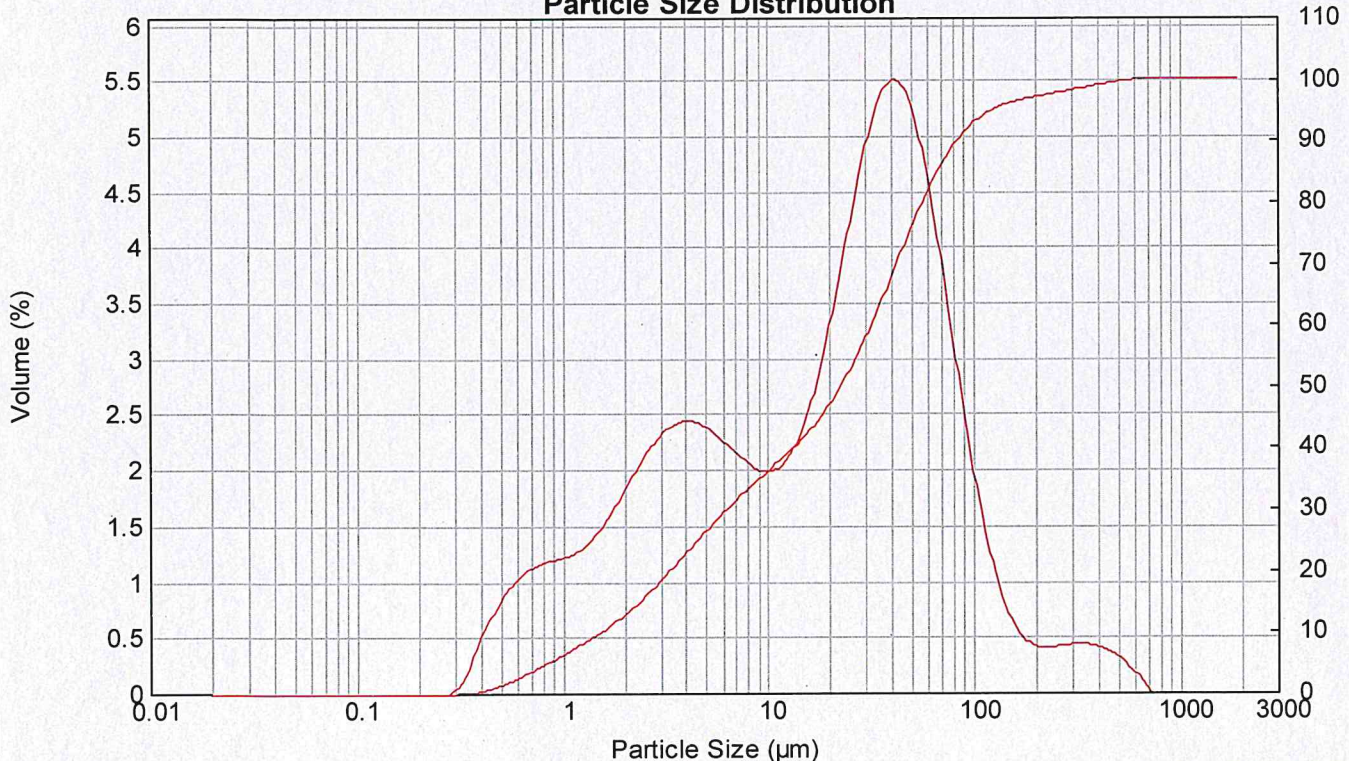
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.60 Residual (%) : 0.366
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0167 %Vol Specific Surface Area : 1.34 m²/g
Mean Diameters : D (0.1) : 1.56 um D (0.5) : 23.01 um D (0.9) : 84.65 um
D [4,3] : 40.86 um D [3,2] : 4.48 um Span : 3.611 Uniformity : 1.46

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.26	7.962	2.04	58.573	4.45	430.887	0.37
0.023	0.00	0.172	0.00	1.262	1.35	9.283	2.00	68.291	3.67	502.377	0.28
0.027	0.00	0.200	0.00	1.471	1.50	10.823	2.04	79.621	2.83	585.729	0.16
0.032	0.00	0.233	0.00	1.715	1.69	12.619	2.21	92.832	2.05	682.910	0.01
0.037	0.00	0.272	0.01	2.000	1.91	14.713	2.52	108.234	1.40	796.214	0.00
0.043	0.00	0.317	0.15	2.332	2.11	17.154	2.98	126.191	0.92	928.318	0.00
0.050	0.00	0.370	0.48	2.719	2.28	20.000	3.56	147.128	0.61	1082.339	0.00
0.059	0.00	0.431	0.71	3.170	2.40	23.318	4.20	171.539	0.46	1261.915	0.00
0.068	0.00	0.502	0.91	3.696	2.45	27.187	4.81	200.000	0.41	1471.285	0.00
0.080	0.00	0.586	1.05	4.309	2.43	31.698	5.28	233.183	0.42	1715.392	0.00
0.093	0.00	0.683	1.14	5.024	2.36	36.957	5.51	271.871	0.43	2000.000	0.00
0.108	0.00	0.796	1.19	5.857	2.25	43.089	5.45	316.979	0.44		
0.126	0.00	0.928	1.22	6.829	2.13	50.238	5.07	369.570	0.42		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 36

Sample Details

Sample ID : WPWB-1D3_3

Measured : 20 มิถุนายน 2565 15:57:48

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_151-162 of 182

Analysed : 20 มิถุนายน 2565 15:57:49

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

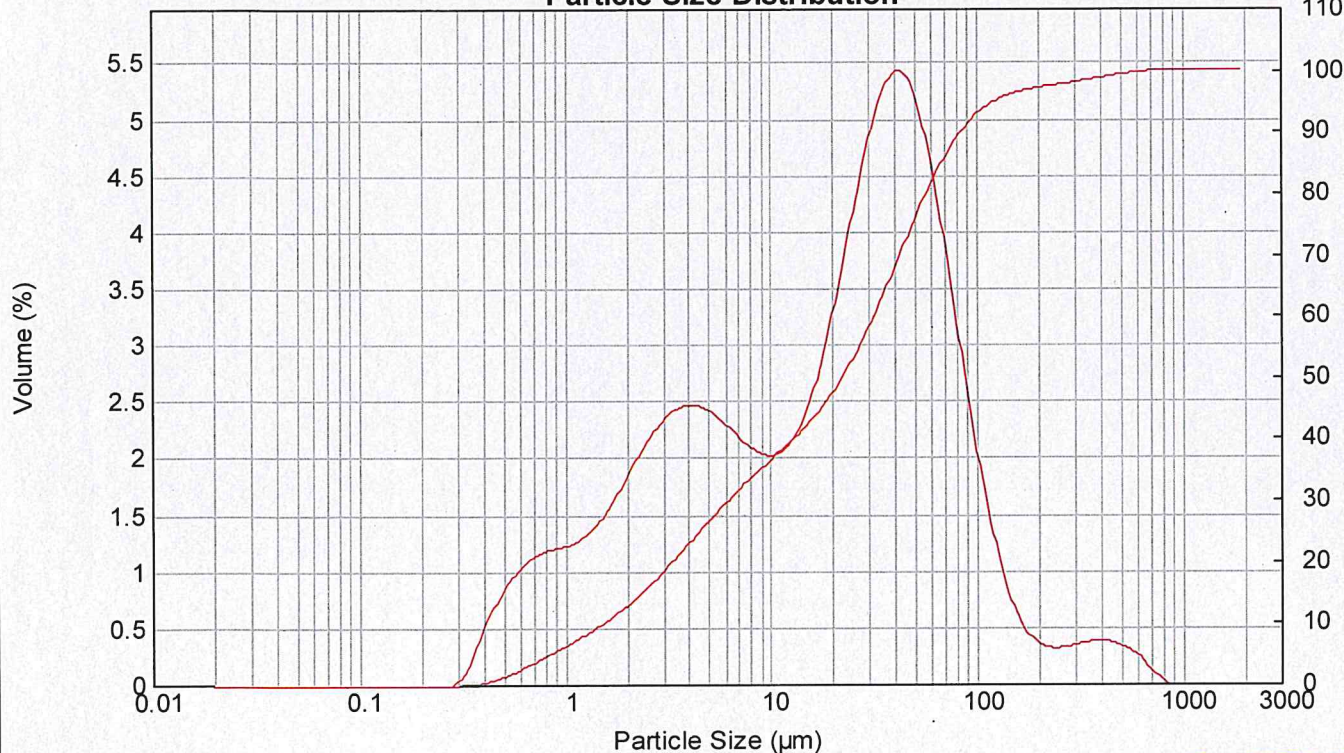
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.29 Residual (%) : 0.354
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0163 %Vol Specific Surface Area : 1.35 m²/g
Mean Diameters : D (0.1) : 1.55 um D (0.5) : 22.71 um D (0.9) : 84.91 um
D [4,3] : 41.36 um D [3,2] : 4.46 um Span : 3.671 Uniformity : 1.51

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.27	7.962	2.07	58.573	4.44	430.887	0.37
0.023	0.00	0.172	0.00	1.262	1.36	9.283	2.03	68.291	3.70	502.377	0.32
0.027	0.00	0.200	0.00	1.471	1.51	10.823	2.07	79.621	2.90	585.729	0.23
0.032	0.00	0.233	0.00	1.715	1.70	12.619	2.23	92.832	2.13	682.910	0.10
0.037	0.00	0.272	0.01	2.000	1.92	14.713	2.52	108.234	1.47	796.214	0.01
0.043	0.00	0.317	0.15	2.332	2.13	17.154	2.96	126.191	0.97	928.318	0.00
0.050	0.00	0.370	0.48	2.719	2.30	20.000	3.52	147.128	0.62	1082.339	0.00
0.059	0.00	0.431	0.71	3.170	2.42	23.318	4.14	171.539	0.34	1261.915	0.00
0.068	0.00	0.502	0.91	3.696	2.47	27.187	4.73	200.000	0.35	1471.285	0.00
0.080	0.00	0.586	1.05	4.309	2.46	31.698	5.19	233.183	0.37	1715.392	0.00
0.093	0.00	0.683	1.14	5.024	2.39	36.957	5.42	271.871	0.39	2000.000	0.00
0.108	0.00	0.796	1.19	5.857	2.28	43.089	5.03	316.979	0.37		
0.126	0.00	0.928	1.22	6.829	2.17	50.238		369.570			
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Report of Samples Analysis

Issued Date : 24 June 2022
Customer : Tetra Tech Inc.
 77 Soi Udomsuk 39/1, Sukhumvit 103 Road, Bangchak,
 Phrakhanong, Bangkok 10260
 Tel : 0 2361 3767 Fax : 0 2361 3768
Tested by : Physical Analysis Section,
 Technical Support for Material Analysis Division, MTEC
Date received : 11 May 2022
Date analyzed : 21 June 2022
Samples : Seabed Sediment No.163 – 175 of 182 samples.
Identification No. : See sample detail
Instrument : Mastersizer 2000, Malvern Instruments.
Test method : Laser diffraction technique.
Analytical conditions : Red light source : He-Ne laser source, λ : 633 nm.
 Blue light source : Solid state light source
 Beam length : 2.35 mm.
 Particle size range analysis : 0.02 – 2,000 μm .
 Dispersion unit : Hydro 2000S (A)
 Dispersing medium : De-ionized water
 Treatment : Ultrasound 10 minutes with ultrasonic bath.
 : Stir at 2000 rpm during measuring.
 Sample refractive index : 1.5300 (as default standard wet)
 Number of experiments : 3
 Laser power : 87.3

Sample preparation : 1. Prepare the instrument for wet analysis. Stirrer should be set at 2000 rpm on Hydro 2000S (A).
 2. 10 – 50 ml. of sample was dispersed and ultrasound 10 minutes with ultrasonic bath.
 3. Add the dispersed sample into Hydro 2000S (A) unit and measure the dispersed sample with Mastersizer 2000.
 4. All measurements are made three times.

Samples detail :

Sample No.	Sample Name	Sample No.	Sample Name
1	WPWB-2B1X	8	WPWB-3C3
2	WPWB-2C2	9	WPWB-3D1
3	WPWB-3B1X	10	WPWB-3D2
4	WPWB-3B2X	11	WPWB-3D3
5	WPWB-3B3X	12	WPWB-4B1X
6	WPWB-3C1	13	WPWB-4C2
7	WPWB-3C2		

Technical Terms

:

Obscuration : value at particle come cover to laser beam (percent), ranging from 10 – 30%.

Residual : on error value of analysis. This value should be less than 5%.

D [4, 3] : mean diameter value by volume.

D [3, 2] : mean diameter value by surface area.

D (v, 0.1) : 10 volume percent less than or equal to a given diameter.

D (v, 0.5) : 50 volume percent less than or equal to a given diameter, median diameter.

D (v, 0.9) : 90 volume percent less than or equal to a given diameter.

Span : the width of the distribution, which is independent of median size (D (v, 0.5)).

Uniformity : a measure of the absolute deviations from the median(D (v, 0.5)).

Specific S.A. : specific surface area, calculated from density and D [3, 2] of a sample.

Results :

MTEC received samples from Tetra Tech Inc. Laser diffraction technique is used in order to analyze the particle size and size distribution by wet analysis.

The results of the particle size and size distribution of samples are shown in tables 1 – 26 and the attachments No.1 – 39.

Table 1 Mastersizer 2000 results of WPWB-2B1X

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	24.00	1.43	17.65	57.04	3.15
	2	24.16	1.44	17.73	57.29	3.15
	3	24.03	1.45	17.67	56.96	3.14
2	1	24.04	1.45	17.35	57.27	3.22
	2	24.13	1.47	17.51	57.38	3.19
	3	24.04	1.46	17.37	57.23	3.21
3	1	24.11	1.46	17.33	57.33	3.22
	2	23.65	1.45	16.97	56.41	3.24
	3	23.91	1.45	17.08	57.07	3.26
Mean		24.01	1.45	17.41	57.11	3.20
STD		0.15	0.01	0.27	0.30	0.04
RSD%		0.63	0.76	1.52	0.52	1.33

Table 2 Mastersizer 2000 results of WPWB-2B1X (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	25.15	67.34	7.51	36.99
	2	25.02	67.33	7.65	36.83
	3	24.91	67.60	7.49	36.82
2	1	24.96	67.37	7.68	36.66
	2	24.73	67.56	7.71	36.85
	3	24.83	67.51	7.66	36.62
3	1	24.76	67.52	7.72	36.65
	2	25.01	67.70	7.28	36.53
	3	24.93	67.46	7.61	36.49
Mean		24.92	67.49	7.59	36.71
STD		0.13	0.13	0.14	0.17

Table 3 Mastersizer 2000 results of WPWB-2C2

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	34.34	1.35	21.16	70.59	3.27
	2	32.94	1.35	21.02	69.96	3.27
	3	33.36	1.35	20.81	70.33	3.31
2	1	33.54	1.35	20.87	71.00	3.34
	2	32.09	1.35	20.70	70.05	3.32
	3	33.24	1.34	20.54	71.08	3.40
3	1	32.88	1.34	20.35	70.39	3.39
	2	32.08	1.33	19.84	68.93	3.41
	3	32.47	1.32	19.66	69.19	3.45
Mean		32.99	1.34	20.55	70.17	3.35
STD		0.73	0.01	0.51	0.73	0.06
RSD%		2.21	0.77	2.49	1.05	1.92

Table 4 Mastersizer 2000 results of WPWB-2C2 (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	23.86	62.92	13.22	39.88
	2	23.93	63.04	13.03	40.10
	3	23.99	62.92	13.09	39.76
2	1	23.93	62.80	13.27	39.50
	2	24.07	62.94	12.99	39.61
	3	24.11	62.62	13.27	39.49
3	1	24.22	62.77	13.01	39.26
	2	24.46	63.00	12.55	39.47
	3	24.59	62.80	12.61	39.37
Mean		24.13	62.87	13.01	39.60
STD		0.25	0.13	0.26	0.26

Table 5 Mastersizer 2000 results of WPWB-3B1X

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	24.94	1.25	10.41	58.46	5.49
	2	24.05	1.25	10.35	57.32	5.42
	3	23.37	1.24	10.08	56.82	5.51
2	1	23.86	1.25	10.21	57.06	5.47
	2	24.09	1.24	10.12	57.65	5.58
	3	23.79	1.24	9.98	56.51	5.54
3	1	23.46	1.24	9.81	56.23	5.61
	2	24.50	1.24	9.81	57.37	5.72
	3	24.90	1.25	10.14	59.13	5.71
Mean		24.11	1.24	10.10	57.39	5.56
STD		0.57	0.00	0.21	0.92	0.10
RSD%		2.37	0.37	2.11	1.61	1.89

Table 6 Mastersizer 2000 results of WPWB-3B1X (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	30.57	60.82	8.61	36.52
	2	30.62	61.23	8.15	36.72
	3	30.87	61.15	7.99	36.31
2	1	30.69	61.25	8.06	36.67
	2	30.83	60.83	8.34	36.19
	3	30.94	61.17	7.89	36.16
3	1	31.05	61.14	7.82	36.04
	2	31.05	60.70	8.25	36.12
	3	30.71	60.42	8.87	36.35
Mean		30.81	60.97	8.22	36.34
STD		0.18	0.29	0.34	0.24

Table 7 Mastersizer 2000 results of WPWB-3B2X

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	27.00	1.41	17.85	59.88	3.28
	2	26.94	1.41	17.85	59.52	3.26
	3	26.80	1.41	17.87	60.03	3.28
2	1	26.46	1.39	17.44	59.38	3.33
	2	26.38	1.40	17.30	58.96	3.33
	3	28.00	1.40	17.24	59.49	3.37
3	1	27.12	1.39	16.92	59.31	3.42
	2	26.43	1.38	16.61	58.82	3.46
	3	27.20	1.38	16.35	59.10	3.53
Mean		26.93	1.40	17.27	59.39	3.36
STD		0.50	0.01	0.56	0.40	0.09
RSD%		1.87	0.86	3.22	0.67	2.78

Table 8 Mastersizer 2000 results of WPWB-3B2X (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	25.07	66.03	8.90	37.10
	2	25.02	66.24	8.74	36.93
	3	25.01	66.03	8.97	37.03
2	1	25.25	66.06	8.69	36.89
	2	25.23	66.26	8.51	36.74
	3	25.26	65.97	8.77	36.69
3	1	25.49	65.81	8.70	36.56
	2	25.65	65.85	8.50	36.41
	3	25.76	65.59	8.65	36.29
Mean		25.30	65.98	8.71	36.74
STD		0.27	0.21	0.16	0.28

Table 9 Mastersizer 2000 results of WPWB-3B3X

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	13.47	1.24	7.44	33.78	4.38
	2	13.49	1.23	7.43	33.82	4.39
	3	13.42	1.24	7.42	33.67	4.37
2	1	13.25	1.23	7.35	32.88	4.31
	2	13.53	1.23	7.40	33.70	4.39
	3	13.29	1.23	7.37	33.05	4.32
3	1	13.29	1.23	7.39	33.01	4.30
	2	13.15	1.23	7.31	32.29	4.25
	3	13.13	1.22	7.32	32.52	4.28
Mean		13.34	1.23	7.38	33.19	4.33
STD		0.15	0.00	0.05	0.58	0.05
RSD%		1.10	0.40	0.62	1.73	1.20

Table 10 Mastersizer 2000 results of WPWB-3B3X (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	29.93	67.42	2.65	8.20
	2	29.96	67.32	2.72	8.19
	3	29.91	67.43	2.66	8.19
2	1	30.06	67.33	2.61	8.17
	2	29.91	67.26	2.84	8.16
	3	29.98	67.41	2.61	8.15
3	1	29.92	67.43	2.65	8.21
	2	30.09	67.35	2.57	8.15
	3	30.08	67.38	2.54	8.13
Mean		29.98	67.37	2.65	8.17
STD		0.07	0.06	0.09	0.03

Table 11 Mastersizer 2000 results of WPWB-3C1

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	23.56	1.24	16.69	57.16	3.35
	2	23.56	1.24	16.54	57.30	3.39
	3	23.38	1.23	16.46	56.98	3.39
2	1	23.35	1.24	16.44	56.68	3.37
	2	23.32	1.25	16.48	56.56	3.36
	3	23.34	1.25	16.28	56.75	3.41
3	1	23.27	1.24	16.21	56.65	3.42
	2	23.42	1.46	17.90	54.84	2.98
	3	23.33	1.45	17.78	54.70	3.00
Mean		23.39	1.29	16.75	56.40	3.30
STD		0.10	0.10	0.63	0.96	0.18
RSD%		0.45	7.38	3.77	1.69	5.32

Table 12 Mastersizer 2000 results of WPWB-3C1 (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	26.33	66.09	7.59	37.02
	2	26.37	65.97	7.67	37.00
	3	26.43	66.06	7.51	36.98
2	1	26.40	66.20	7.40	36.55
	2	26.30	66.38	7.32	36.69
	3	26.41	66.14	7.45	36.54
3	1	26.44	66.17	7.39	36.74
	2	24.38	69.22	6.40	36.22
	3	24.46	69.20	6.35	36.06
Mean		25.95	66.83	7.23	36.64
STD		0.87	1.36	0.50	0.34

Table 13 Mastersizer 2000 results of WPWB-3C2

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	39.39	1.41	21.05	88.40	4.13
	2	38.28	1.40	20.76	87.95	4.17
	3	41.10	1.41	20.68	89.62	4.27
2	1	41.04	1.42	20.93	92.63	4.36
	2	40.37	1.42	20.62	90.11	4.30
	3	39.31	1.66	22.28	83.52	3.67
3	1	38.02	1.68	22.88	84.12	3.60
	2	38.97	1.67	22.51	83.31	3.63
	3	38.99	1.65	21.73	82.79	3.74
Mean		39.50	1.52	21.49	86.94	3.98
STD		1.11	0.13	0.87	3.58	0.32
RSD%		2.82	8.82	4.06	4.12	7.97

Table 14 Mastersizer 2000 results of WPWB-3C2 (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	23.76	58.29	17.96	42.27
	2	23.93	58.37	17.70	41.59
	3	23.92	58.22	17.86	41.71
2	1	23.77	57.85	18.38	41.67
	2	23.89	58.09	18.02	41.63
	3	22.09	60.94	16.98	41.48
3	1	21.84	60.90	17.26	41.95
	2	22.00	60.98	17.02	41.79
	3	22.37	60.96	16.67	41.67
Mean		23.06	59.40	17.54	41.75
STD		0.95	1.47	0.58	0.24

Table 15 Mastersizer 2000 results of WPWB-3C3

No.of measurement	Sub-run	D [4,3] (µm)	D (v,0.1) (µm)	D (v,0.5) (µm)	D (v,0.9) (µm)	Span
1	1	22.59	1.39	15.98	54.18	3.30
	2	22.41	1.39	15.79	53.86	3.32
	3	22.38	1.39	15.74	53.76	3.33
2	1	22.57	1.40	15.78	54.35	3.36
	2	22.52	1.39	15.84	54.07	3.33
	3	22.53	1.39	15.68	54.29	3.37
3	1	22.25	1.39	15.48	53.62	3.37
	2	22.27	1.38	15.32	53.85	3.43
	3	22.31	1.39	15.44	53.86	3.40
Mean		22.42	1.39	15.67	53.98	3.36
STD		0.13	0.01	0.21	0.25	0.04
RSD%		0.58	0.37	1.36	0.46	1.19

Table 16 Mastersizer 2000 results of WPWB-3C3 (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	25.73	67.94	6.33	35.46
	2	25.80	68.02	6.18	35.34
	3	25.81	68.04	6.15	35.27
2	1	25.67	67.88	6.45	35.19
	2	25.73	67.96	6.31	35.23
	3	25.77	67.81	6.41	35.40
3	1	25.84	68.05	6.11	35.16
	2	26.00	67.73	6.27	35.00
	3	25.84	67.92	6.24	35.19
Mean		25.80	67.93	6.27	35.25
STD		0.09	0.11	0.12	0.14

Table 17 Mastersizer 2000 results of WPWB-3D1

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	26.62	1.42	19.88	63.52	3.12
	2	26.60	1.42	19.71	63.56	3.15
	3	26.69	1.42	19.67	63.94	3.18
2	1	26.61	1.42	19.70	63.68	3.16
	2	26.59	1.43	19.65	63.71	3.17
	3	26.55	1.42	19.55	63.58	3.18
3	1	26.27	1.41	19.14	63.15	3.23
	2	26.31	1.41	19.08	63.35	3.25
	3	26.26	1.41	19.01	63.28	3.26
Mean		26.50	1.42	19.49	63.53	3.19
STD		0.17	0.01	0.32	0.24	0.04
RSD%		0.64	0.49	1.65	0.38	1.40

Table 18 Mastersizer 2000 results of WPWB-3D1 (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	24.12	65.41	10.47	39.72
	2	24.20	65.32	10.48	39.65
	3	24.18	65.16	10.66	39.91
2	1	24.17	65.29	10.54	39.79
	2	24.12	65.32	10.55	39.86
	3	24.23	65.28	10.49	39.76
3	1	24.43	65.27	10.30	39.75
	2	24.47	65.15	10.38	39.44
	3	24.50	65.15	10.36	39.58
Mean		24.27	65.26	10.47	39.72
STD		0.15	0.09	0.11	0.15

Table 19 Mastersizer 2000 results of WPWB-3D2

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	26.24	1.33	20.05	61.91	3.02
	2	26.50	1.34	20.12	62.56	3.04
	3	26.23	1.34	20.04	61.88	3.02
2	1	26.53	1.35	20.05	62.84	3.07
	2	26.41	1.35	19.94	62.43	3.06
	3	26.32	1.35	19.92	62.26	3.06
3	1	26.26	1.34	19.67	62.30	3.10
	2	26.48	1.35	19.89	62.81	3.09
	3	26.44	1.34	19.52	63.00	3.16
Mean		26.38	1.34	19.91	62.44	3.07
STD		0.12	0.01	0.20	0.40	0.04
RSD%		0.45	0.44	0.98	0.64	1.40

Table 20 Mastersizer 2000 results of WPWB-3D2 (Volume in%) (By customer request)

No. of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	24.01	66.27	9.73	38.68
	2	23.93	66.04	10.03	38.66
	3	23.93	66.36	9.71	38.63
2	1	23.87	65.98	10.16	38.88
	2	23.96	66.08	9.97	38.69
	3	23.98	66.13	9.89	38.81
3	1	24.09	66.00	9.91	38.55
	2	23.94	65.92	10.14	38.71
	3	24.19	65.58	10.22	38.44
Mean		23.99	66.04	9.97	38.67
STD		0.10	0.22	0.18	0.13

Table 21 Mastersizer 2000 results of WPWB-3D3

No. of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	30.24	1.30	18.21	65.97	3.55
	2	30.40	1.30	18.02	65.85	3.58
	3	30.90	1.30	18.04	66.35	3.61
2	1	29.02	1.53	20.04	62.78	3.06
	2	29.29	1.53	20.02	63.07	3.07
	3	29.47	1.53	19.72	63.52	3.14
3	1	30.08	1.53	19.66	63.44	3.15
	2	29.56	1.52	19.54	63.40	3.17
	3	30.24	1.52	19.34	63.49	3.21
Mean		29.91	1.45	19.18	64.21	3.28
STD		0.61	0.11	0.85	1.41	0.23
RSD%		2.03	7.84	4.41	2.20	6.97

Table 22 Mastersizer 2000 results of WPWB-3D3 (Volume in%) (By customer request)

No. of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	25.27	63.39	11.34	37.99
	2	25.37	63.33	11.30	38.06
	3	25.32	63.20	11.48	38.21
2	1	23.20	66.68	10.12	38.08
	2	23.18	66.58	10.24	37.59
	3	23.35	66.23	10.42	37.52
3	1	23.35	66.27	10.39	37.48
	2	23.47	66.16	10.37	37.37
	3	23.53	66.07	10.40	37.50
Mean		24.00	65.32	10.67	37.76
STD		0.99	1.53	0.54	0.32

Table 23 Mastersizer 2000 results of WPWB-4B1X

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	24.93	1.20	16.76	61.20	3.58
	2	24.95	1.41	18.98	58.48	3.01
	3	24.97	1.41	18.90	58.69	3.03
2	1	24.96	1.43	18.95	58.55	3.01
	2	24.94	1.42	18.78	58.70	3.05
	3	24.98	1.43	18.80	58.78	3.05
3	1	24.82	1.43	18.58	58.48	3.07
	2	24.99	1.42	18.52	58.94	3.11
	3	24.87	1.42	18.41	58.84	3.12
Mean		24.93	1.40	18.52	58.96	3.11
STD		0.06	0.07	0.69	0.85	0.18
RSD%		0.23	5.25	3.72	1.45	5.74

Table 24 Mastersizer 2000 results of WPWB-4B1X (Volume in%) (By customer request)

No.of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	26.42	64.12	9.46	37.23
	2	24.13	67.70	8.17	36.88
	3	24.10	67.63	8.28	36.86
2	1	23.97	67.82	8.21	36.73
	2	24.03	67.68	8.29	36.86
	3	23.91	67.77	8.32	36.91
3	1	24.08	67.72	8.20	36.69
	2	24.06	67.51	8.43	36.58
	3	24.15	67.49	8.36	36.94
Mean		24.32	67.27	8.41	36.85
STD		0.79	1.19	0.40	0.18

Table 25 Mastersizer 2000 results of WPWB-4C2

No.of measurement	Sub-run	D [4,3] (μm)	D (v,0.1) (μm)	D (v,0.5) (μm)	D (v,0.9) (μm)	Span
1	1	38.95	1.46	20.24	84.57	4.11
	2	39.64	1.47	20.29	86.08	4.17
	3	37.70	1.73	22.47	82.02	3.57
2	1	39.39	1.71	22.25	82.78	3.64
	2	39.48	1.72	22.27	82.67	3.64
	3	37.17	1.70	21.83	80.18	3.60
3	1	37.42	1.68	21.27	78.09	3.59
	2	39.92	1.71	22.08	85.94	3.81
	3	39.84	1.70	21.67	83.34	3.77
Mean		38.83	1.65	21.60	82.85	3.77
STD		1.10	0.11	0.84	2.59	0.23
RSD%		2.83	6.66	3.87	3.13	6.02

Table 26 Mastersizer 2000 results of WPWB-4C2 (Volume in%) (By customer request)

No. of measurement	Sub-run	0.02 - 3.9 (micron)	3.9 – 62.5 (micron)	62.5 - 2000 (micron)	Mode (micron)
1	1	24.00	59.04	16.96	41.73
	2	23.91	58.88	17.21	41.65
	3	21.95	61.43	16.62	41.36
2	1	22.11	61.13	16.76	41.65
	2	22.03	61.30	16.67	41.46
	3	22.27	61.59	16.14	41.46
3	1	22.55	61.92	15.53	41.53
	2	22.17	60.55	17.28	41.49
	3	22.37	60.94	16.70	41.37
Mean		22.60	60.75	16.65	41.52
STD		0.79	1.09	0.54	0.13

Note : 1. The specific surface area is inapplicable unless the density of a sample is known.
 2. The results of particle size distribution are dispersion particle only.
 3. Some particle of sample are vary size and size over range of instrument.

Interpretation/Opinion : None

Attached pages :

The attachment number	Detail
1 – 3	Mastersizer 2000 results of WPWB-2B1X
4 – 6	Mastersizer 2000 results of WPWB-2C2
7 – 9	Mastersizer 2000 results of WPWB-3B1X
10 – 12	Mastersizer 2000 results of WPWB-3B2X
13 – 15	Mastersizer 2000 results of WPWB-3B3X
16 – 18	Mastersizer 2000 results of WPWB-3C1
19 – 21	Mastersizer 2000 results of WPWB-3C2
22 – 24	Mastersizer 2000 results of WPWB-3C3
25 – 27	Mastersizer 2000 results of WPWB-3D1
28 – 30	Mastersizer 2000 results of WPWB-3D2
31 – 33	Mastersizer 2000 results of WPWB-3D3
34 – 36	Mastersizer 2000 results of WPWB-4B1X
37 – 39	Mastersizer 2000 results of WPWB-4C2

Work performed by :



(Mr.Arintarached Sirinantawittaya)

Approved by :


(Ms.Suphakan Kijamnajsuk)

Remark

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3. Experimental results are only valid for the specimens tested.

Result : Analysis Report

Attached page 1

Sample Details

Sample ID : WPWB-2B1X_1

Measured : 21 มิถุนายน 2565 9:10:58

Sample File : C:\Users\001827\Desktop\งานเรา\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetrat

Analysed : 21 มิถุนายน 2565 9:10:59

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

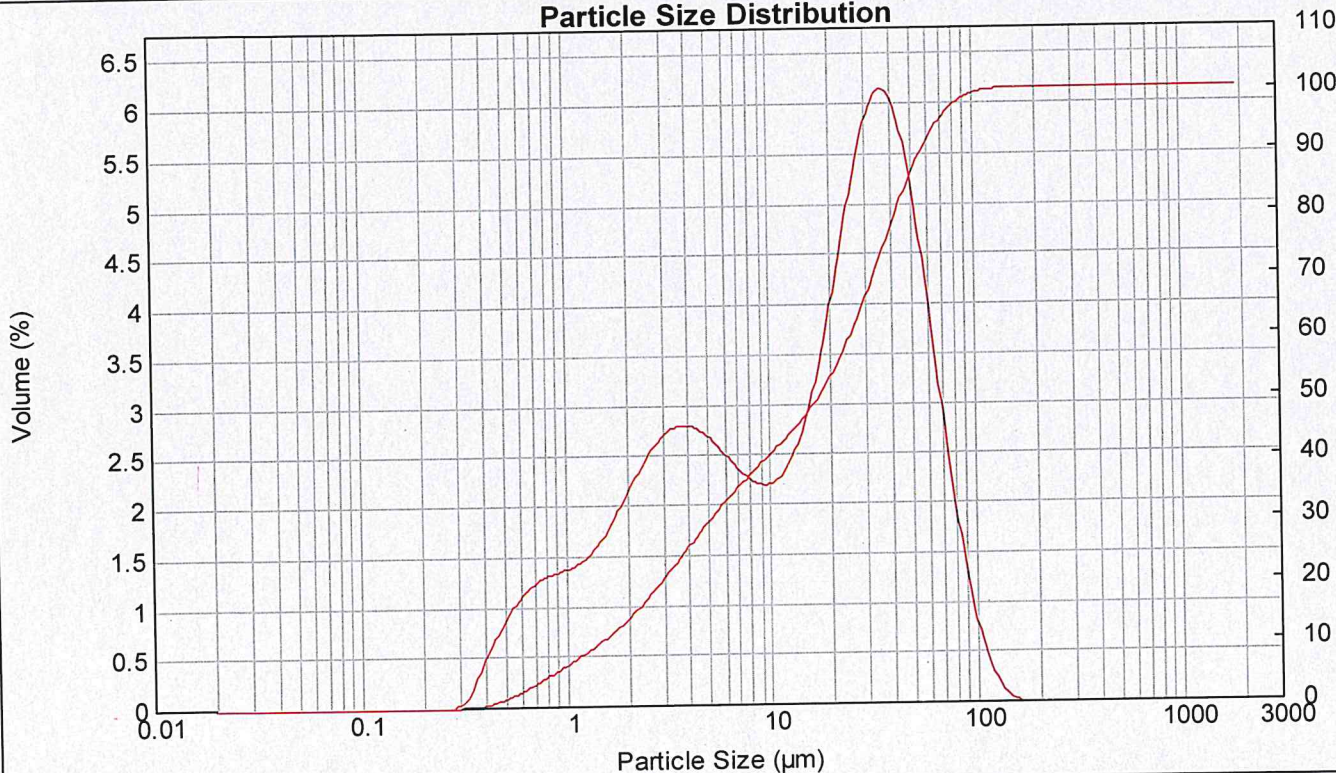
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.56 Residual (%) : 0.851
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0150 %Vol Specific Surface Area : 1.46 m²/g
Mean Diameters : D (0.1) : 1.44 um D (0.5) : 17.73 um D (0.9) : 57.29 um
D [4,3] : 24.16 um D [3,2] : 4.11 um Span : 3.149 Uniformity : 1.05

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.42	7.962	2.22	58.573	3.73	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.54	9.283	2.20	68.291	2.61	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.72	10.823	2.30	79.621	1.63	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.96	12.619	2.55	92.832	0.87	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.22	14.713	2.98	108.234	0.39	796.214	0.00
0.043	0.00	0.317	0.12	2.332	2.47	17.154	3.58	126.191	0.12	928.318	0.00
0.050	0.00	0.370	0.44	2.719	2.66	20.000	4.31	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.70	3.170	2.77	23.318	5.07	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.95	3.696	2.80	27.187	5.73	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.13	4.309	2.75	31.698	6.11	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.25	5.024	2.63	36.957	6.10	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.32	5.857	2.48	43.089	5.65	316.979	0.00		
0.126	0.00	0.928	1.36	6.829	2.33	50.238	4.81	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 2

Sample Details

Sample ID : WPWB-2B1X_2

Measured : 21 มิถุนายน 2565 9:12:48

Sample File : C:\Users\001827\Desktop\งานเทคนิค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:12:50

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

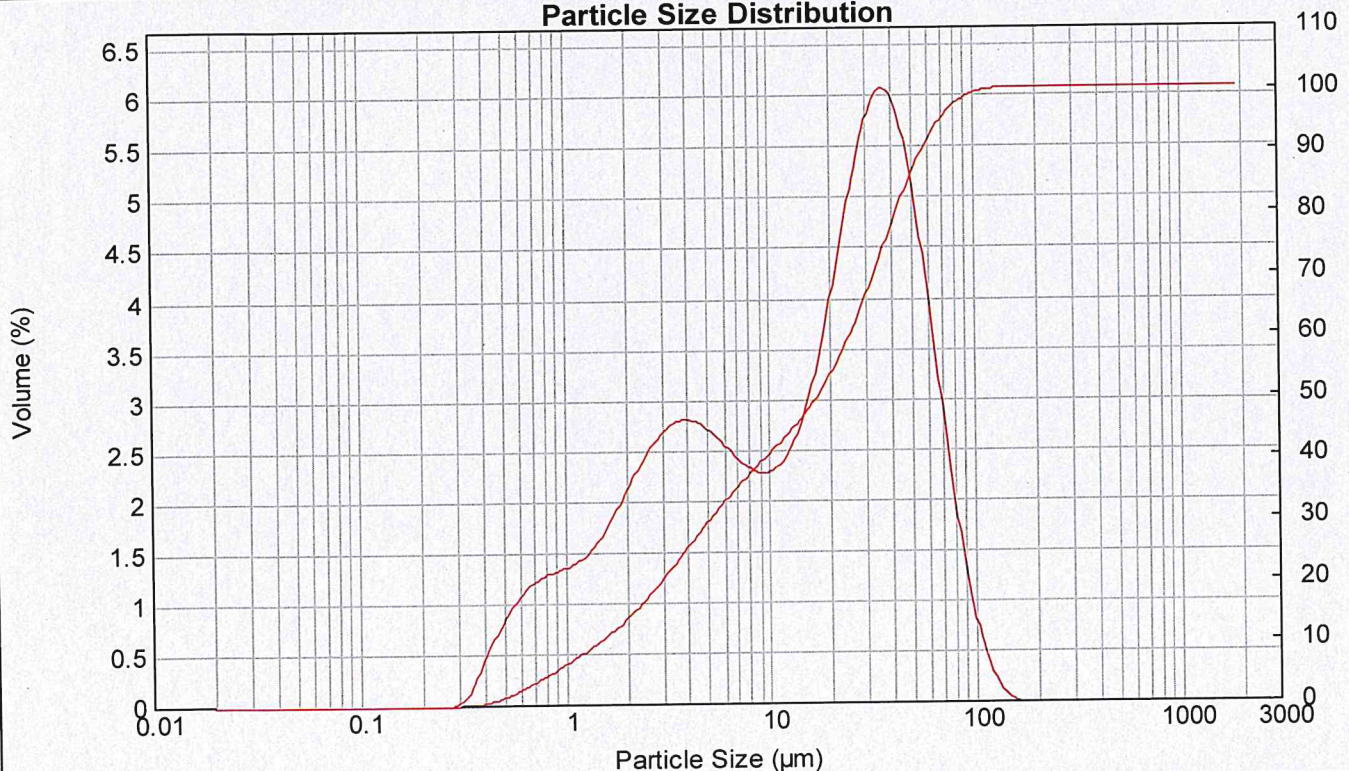
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.73 Residual (%) : 0.832
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0144 %Vol Specific Surface Area : 1.44 m²/g
Mean Diameters : D (0.1) : 1.47 um D (0.5) : 17.51 um D (0.9) : 57.38 um
D [4,3] : 24.13 um D [3,2] : 4.17 um Span : 3.193 Uniformity : 1.06

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.41	7.962	2.30	58.573	3.72	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.52	9.283	2.28	68.291	2.63	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.70	10.823	2.38	79.621	1.65	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.94	12.619	2.62	92.832	0.89	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.20	14.713	3.03	108.234	0.40	796.214	0.00
0.043	0.00	0.317	0.11	2.332	2.45	17.154	3.60	126.191	0.11	928.318	0.00
0.050	0.00	0.370	0.42	2.719	2.65	20.000	4.30	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.68	3.170	2.77	23.318	5.03	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.92	3.696	2.81	27.187	5.66	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.10	4.309	2.77	31.698	6.04	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.22	5.024	2.67	36.957	6.03	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.30	5.857	2.54	43.089	5.59	316.979	0.00		
0.126	0.00	0.928	1.35	6.829	2.40	50.238	4.77	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

Attached page 3

Sample Details

Sample ID : WPWB-2B1X_3

Measured : 21 มิถุนายน 2565 9:13:35

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:13:37

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

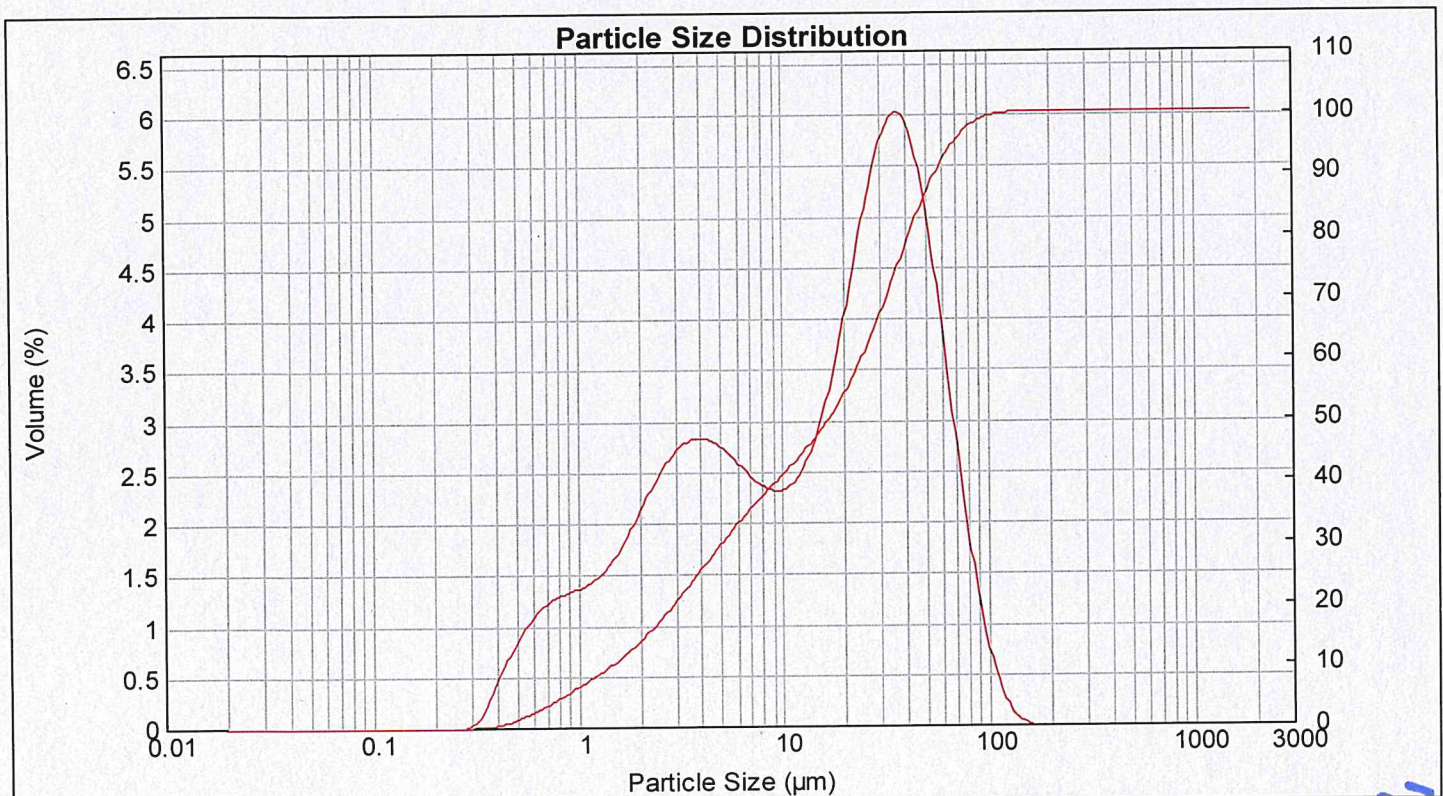
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.50 Residual (%) : 0.887
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0141 %Vol Specific Surface Area : 1.46 m²/g
Mean Diameters : D (0.1) : 1.45 um D (0.5) : 16.96 um D (0.9) : 56.41 um
D [4,3] : 23.65 um D [3,2] : 4.12 um Span : 3.240 Uniformity : 1.07

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.43	7.962	2.35	58.573	3.61	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.54	9.283	2.33	68.291	2.51	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.72	10.823	2.43	79.621	1.55	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.96	12.619	2.66	92.832	0.82	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.22	14.713	3.07	108.234	0.35	796.214	0.00
0.043	0.00	0.317	0.11	2.332	2.47	17.154	3.64	126.191	0.09	928.318	0.00
0.050	0.00	0.370	0.42	2.719	2.67	20.000	4.32	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.69	3.170	2.80	23.318	5.04	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.93	3.696	2.85	27.187	5.65	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.12	4.309	2.81	31.698	6.01	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.24	5.024	2.71	36.957	5.97	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.31	5.857	2.58	43.089	5.51	316.979	0.00		
0.126	0.00	0.928	1.36	6.829	2.44	50.238	4.67	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 4

Sample Details

Sample ID : WPWB-2C2_1

Measured : 21 มิถุนายน 2565 9:32:25

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163_175 of 182

Analysed : 21 มิถุนายน 2565 9:32:27

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

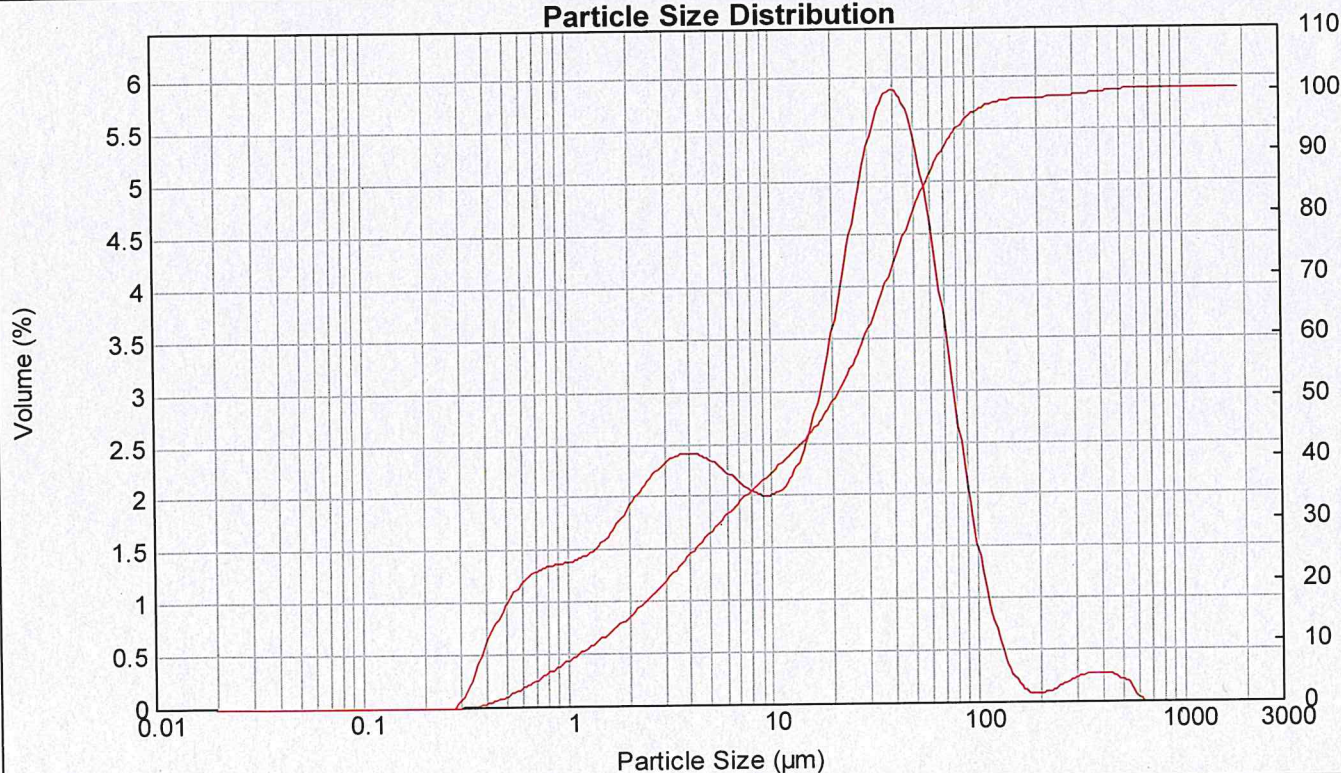
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.07 Residual (%) : 0.409
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0150 %Vol Specific Surface Area : 1.48 m²/g
Mean Diameters : D (0.1) : 1.35 um D (0.5) : 21.02 um D (0.9) : 69.96 um
D [4,3] : 32.94 um D [3,2] : 4.06 um Span : 3.265 Uniformity : 1.26

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.42	7.962	2.03	58.573	4.39	430.887	0.25
0.023	0.00	0.172	0.00	1.262	1.49	9.283	2.01	68.291	3.43	502.377	0.18
0.027	0.00	0.200	0.00	1.471	1.62	10.823	2.09	79.621	2.47	585.729	0.01
0.032	0.00	0.233	0.00	1.715	1.79	12.619	2.29	92.832	1.61	682.910	0.00
0.037	0.00	0.272	0.02	2.000	1.98	14.713	2.66	108.234	0.92	796.214	0.00
0.043	0.00	0.317	0.02	2.332	2.16	17.154	3.19	126.191	0.45	928.318	0.00
0.050	0.00	0.370	0.22	2.719	2.30	20.000	3.85	147.128	0.19	1082.339	0.00
0.059	0.00	0.431	0.57	3.170	2.39	23.318	4.57	171.539	0.09	1261.915	0.00
0.068	0.00	0.502	0.83	3.696	2.42	27.187	5.23	200.000	0.09	1471.285	0.00
0.080	0.00	0.586	1.06	4.309	2.40	31.698	5.71	233.183	0.15	1715.392	0.00
0.093	0.00	0.683	1.21	5.024	2.32	36.957	5.90	271.871	0.22	2000.000	0.00
0.108	0.00	0.796	1.31	5.857	2.22	43.089	5.72	316.979	0.26		
0.126	0.00	0.928	1.36	6.829	2.11	50.238	5.19	369.570	0.28		
0.147	0.00	1.082	1.38	7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 5

Sample Details

Sample ID : WPWB-2C2_2

Measured : 21 มิถุนายน 2565 9:33:47

Sample File : C:\Users\001827\Desktop\งานงาน\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:33:49

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

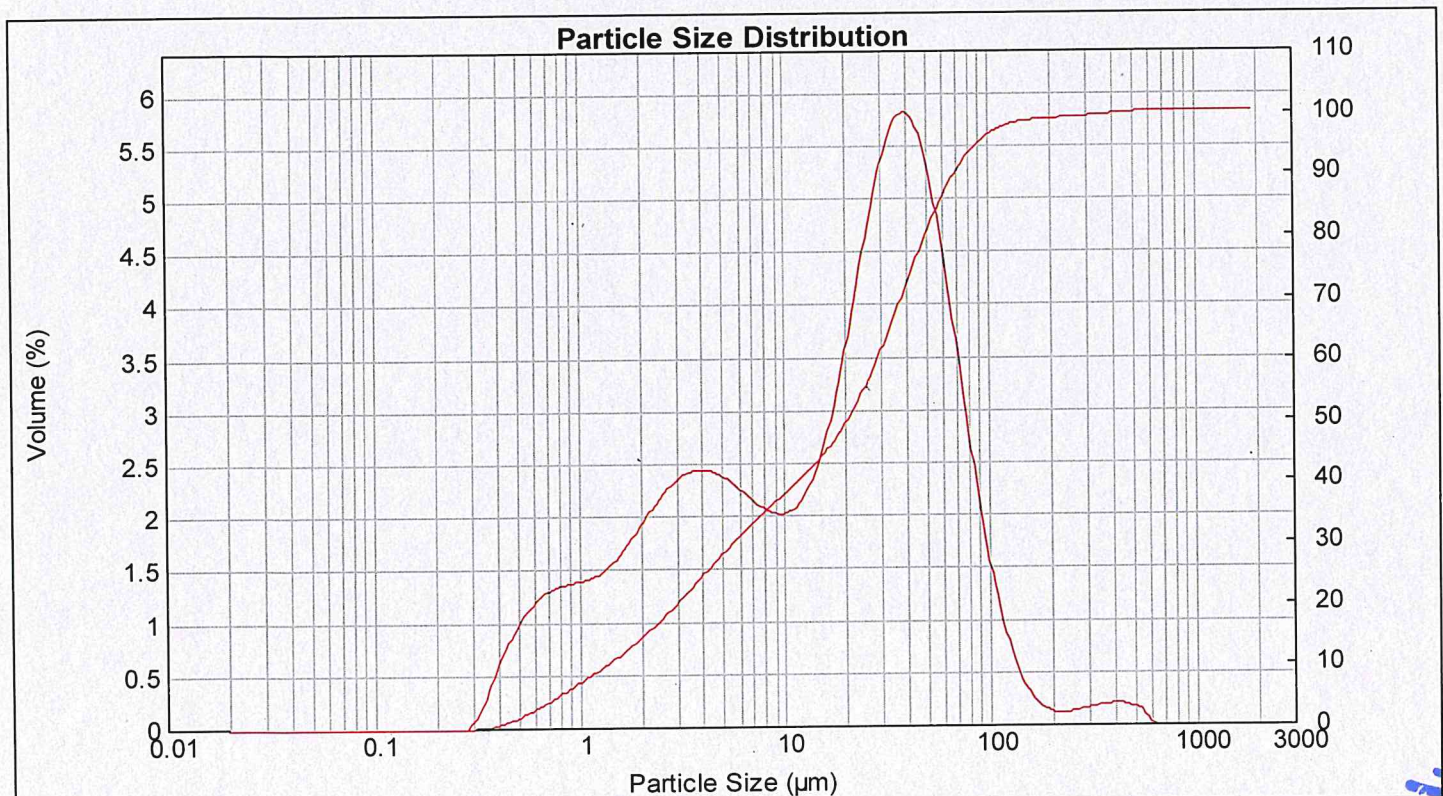
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.70 Residual (%) : 0.418
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0146 %Vol Specific Surface Area : 1.48 m²/g
Mean Diameters : D (0.1) : 1.35 um D (0.5) : 20.7 um D (0.9) : 70.05 um
D [4,3] : 32.09 um D [3,2] : 4.05 um Span : 3.319 Uniformity : 1.24

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.42	7.962	2.05	58.573	4.29	430.887	0.20
0.023	0.00	0.172	0.00	1.262	1.50	9.283	2.03	68.291	3.36	502.377	0.15
0.027	0.00	0.200	0.00	1.471	1.63	10.823	2.10	79.621	2.44	585.729	0.01
0.032	0.00	0.233	0.00	1.715	1.80	12.619	2.31	92.832	1.64	682.910	0.00
0.037	0.00	0.272	0.00	2.000	1.99	14.713	2.68	108.234	1.00	796.214	0.00
0.043	0.00	0.317	0.02	2.332	2.17	17.154	3.21	126.191	0.56	928.318	0.00
0.050	0.00	0.370	0.21	2.719	2.32	20.000	3.87	147.128	0.29	1082.339	0.00
0.059	0.00	0.431	0.57	3.170	2.41	23.318	4.58	171.539	0.16	1261.915	0.00
0.068	0.00	0.502	0.83	3.696	2.45	27.187	5.22	200.000	0.12	1471.285	0.00
0.080	0.00	0.586	1.05	4.309	2.42	31.698	5.68	233.183	0.13	1715.392	0.00
0.093	0.00	0.683	1.21	5.024	2.35	36.957	5.83	271.871	0.16	2000.000	0.00
0.108	0.00	0.796	1.31	5.857	2.24	43.089	5.63	316.979	0.19		
0.126	0.00	0.928	1.36	6.829	2.13	50.238	5.09	369.570	0.20		
0.147	0.00	1.082	1.39	7.962		58.573		430.887			



Result : Analysis Report

Attached page 6

Sample Details

Sample ID : WPWB-2C2_3

Measured : 21 มิถุนายน 2565 9:35:53

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:35:55

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

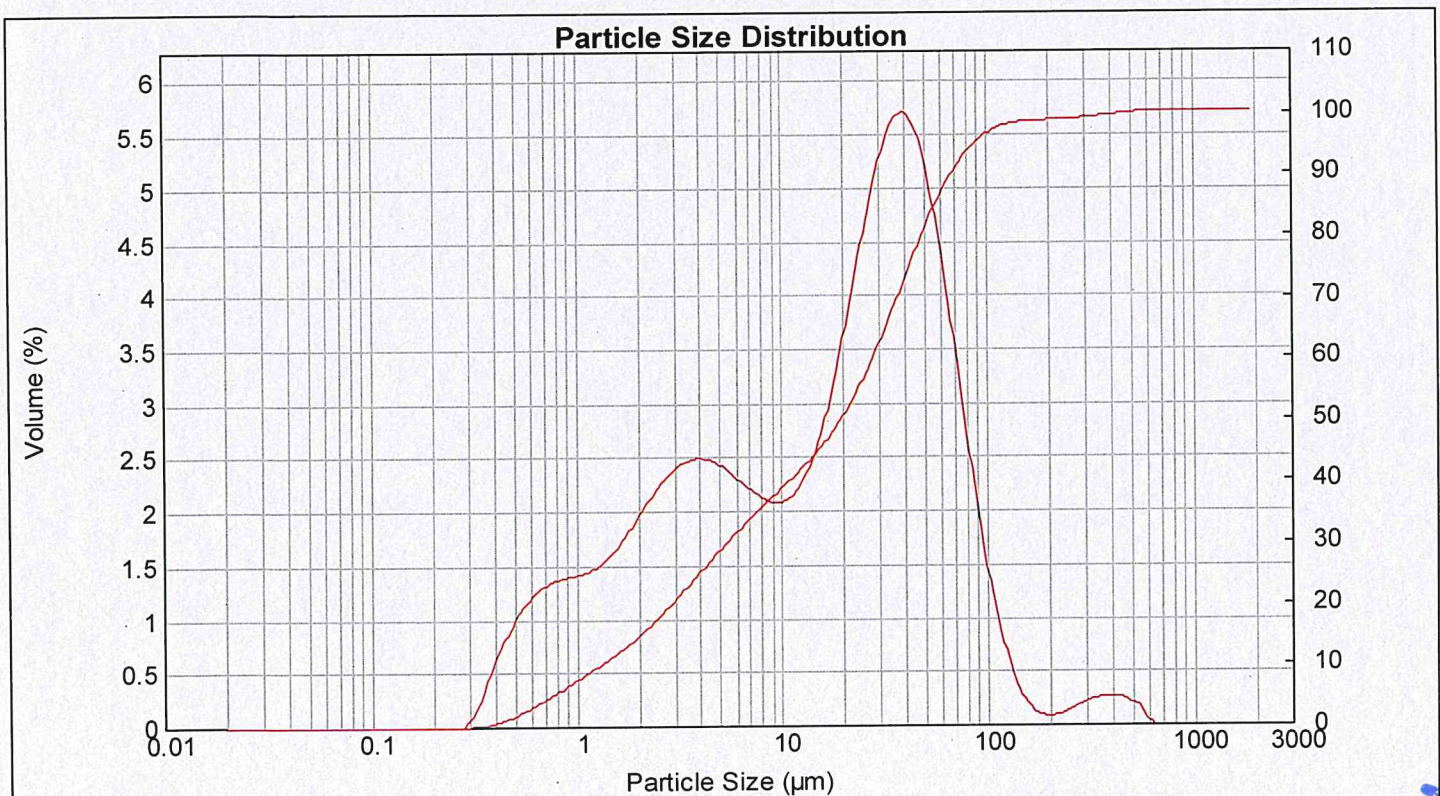
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.31 Residual (%) : 0.409
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0141 %Vol Specific Surface Area : 1.5 m²/g
Mean Diameters : D (0.1) : 1.33 um D (0.5) : 19.84 um D (0.9) : 68.93 um
D [4,3] : 32.08 um D [3,2] : 4 um Span : 3.407 Uniformity : 1.31

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.44	7.962	2.11	58.573	4.20	430.887	0.24
0.023	0.00	0.172	0.00	1.262	1.52	9.283	2.09	68.291	3.29	502.377	0.18
0.027	0.00	0.200	0.00	1.471	1.52	10.823	2.17	79.621	2.36	585.729	0.01
0.032	0.00	0.233	0.00	1.715	1.66	12.619	2.38	92.832	1.55	682.910	0.00
0.037	0.00	0.272	0.02	2.000	1.83	14.713	2.74	108.234	0.90	796.214	0.00
0.043	0.00	0.317	0.21	2.332	2.03	17.154	3.25	126.191	0.46	928.318	0.00
0.050	0.00	0.370	0.58	2.719	2.22	20.000	3.88	147.128	0.20	1082.339	0.00
0.059	0.00	0.431	0.83	3.170	2.46	23.318	4.55	171.539	0.10	1261.915	0.00
0.068	0.00	0.502	1.07	3.696	2.50	27.187	5.16	200.000	0.09	1471.285	0.00
0.080	0.00	0.586	1.23	4.309	2.47	31.698	5.58	233.183	0.14	1715.392	0.00
0.093	0.00	0.683	1.33	5.024	2.40	36.957	5.72	271.871	0.20	2000.000	0.00
0.108	0.00	0.796	1.38	5.857	2.30	43.089	5.52	316.979	0.25		
0.126	0.00	0.928	1.41	6.829	2.19	50.238	4.99	369.570	0.27		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 7

Sample Details

Sample ID : WPWB-3B1X_1

Measured : 21 มิถุนายน 2565 9:46:38

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:46:40

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

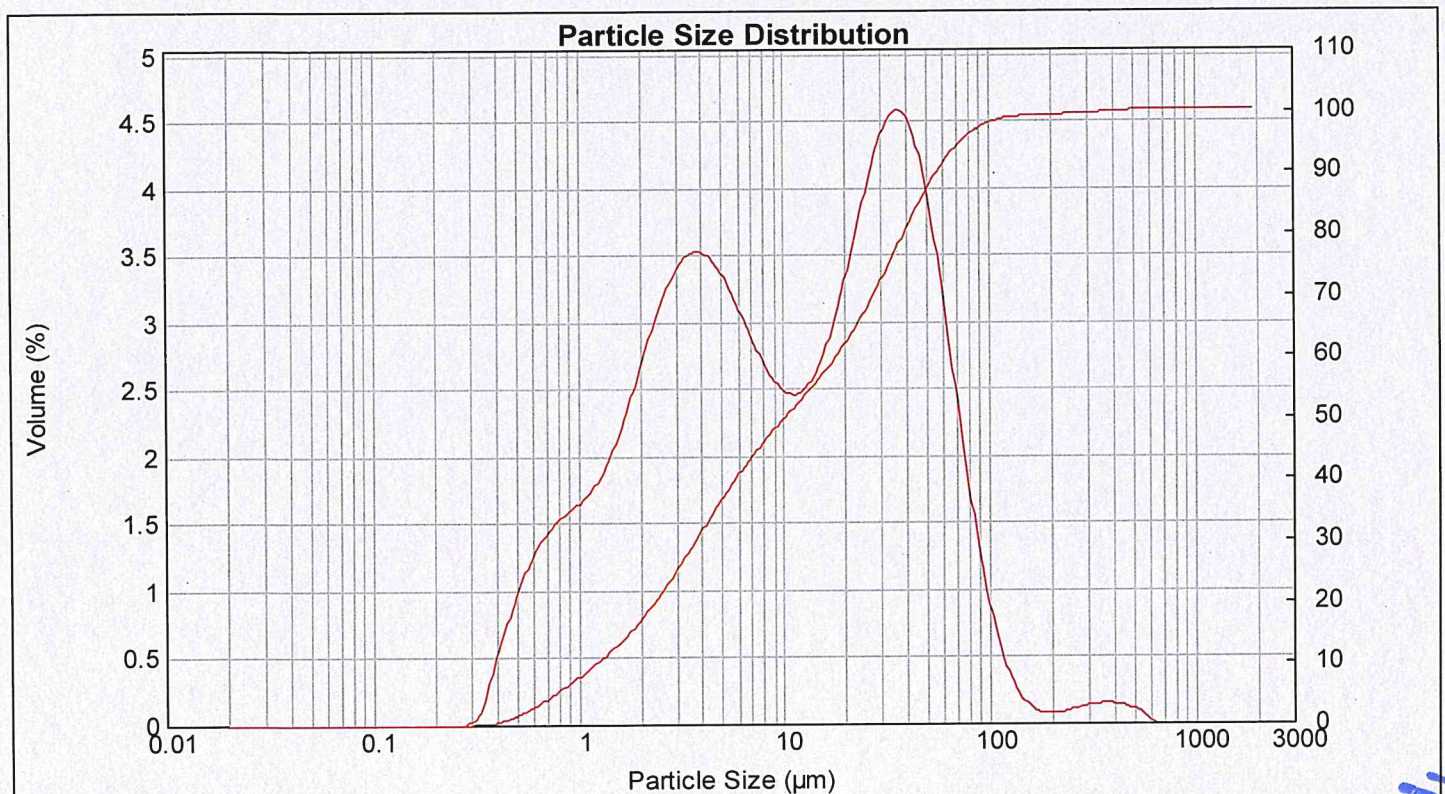
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.72 Residual (%) : 0.550
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0121 %Vol Specific Surface Area : 1.7 m²/g
Mean Diameters : D (0.1) : 1.25 um D (0.5) : 10.35 um D (0.9) : 57.32 um
D [4,3] : 24.05 um D [3,2] : 3.53 um Span : 5.417 Uniformity : 1.97

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.74	7.962	2.64	58.573	3.01	430.887	0.13
0.023	0.00	0.172	0.00	1.262	1.90	9.283	2.51	68.291	2.24	502.377	0.09
0.027	0.00	0.200	0.00	1.471	2.15	10.823	2.47	79.621	1.53	585.729	0.01
0.032	0.00	0.233	0.00	1.715	2.46	12.619	2.55	92.832	0.94	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.79	14.713	2.76	108.234	0.52	796.214	0.00
0.043	0.00	0.317	0.11	2.332	3.10	17.154	3.08	126.191	0.26	928.318	0.00
0.050	0.00	0.370	0.47	2.719	3.35	20.000	3.50	147.128	0.12	1082.339	0.00
0.059	0.00	0.431	0.78	3.170	3.50	23.318	3.95	171.539	0.08	1261.915	0.00
0.068	0.00	0.502	1.07	3.696	3.46	27.187	4.34	200.000	0.10	1471.285	0.00
0.080	0.00	0.586	1.30	4.309	3.29	31.698	4.56	233.183	0.13	1715.392	0.00
0.093	0.00	0.683	1.45	5.024	3.07	36.957	4.27	271.871	0.14	2000.000	0.00
0.108	0.00	0.796	1.64	5.857	2.84	43.089	3.72	316.979	0.15		
0.126	0.00	0.928		6.829		50.238		369.570			
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 8

Sample Details

Sample ID : WPWB-3B1X_2

Measured : 21 มิถุนายน 2565 9:47:58

Sample File : C:\Users\001827\Desktop\งานเทร\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 9:48:00

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

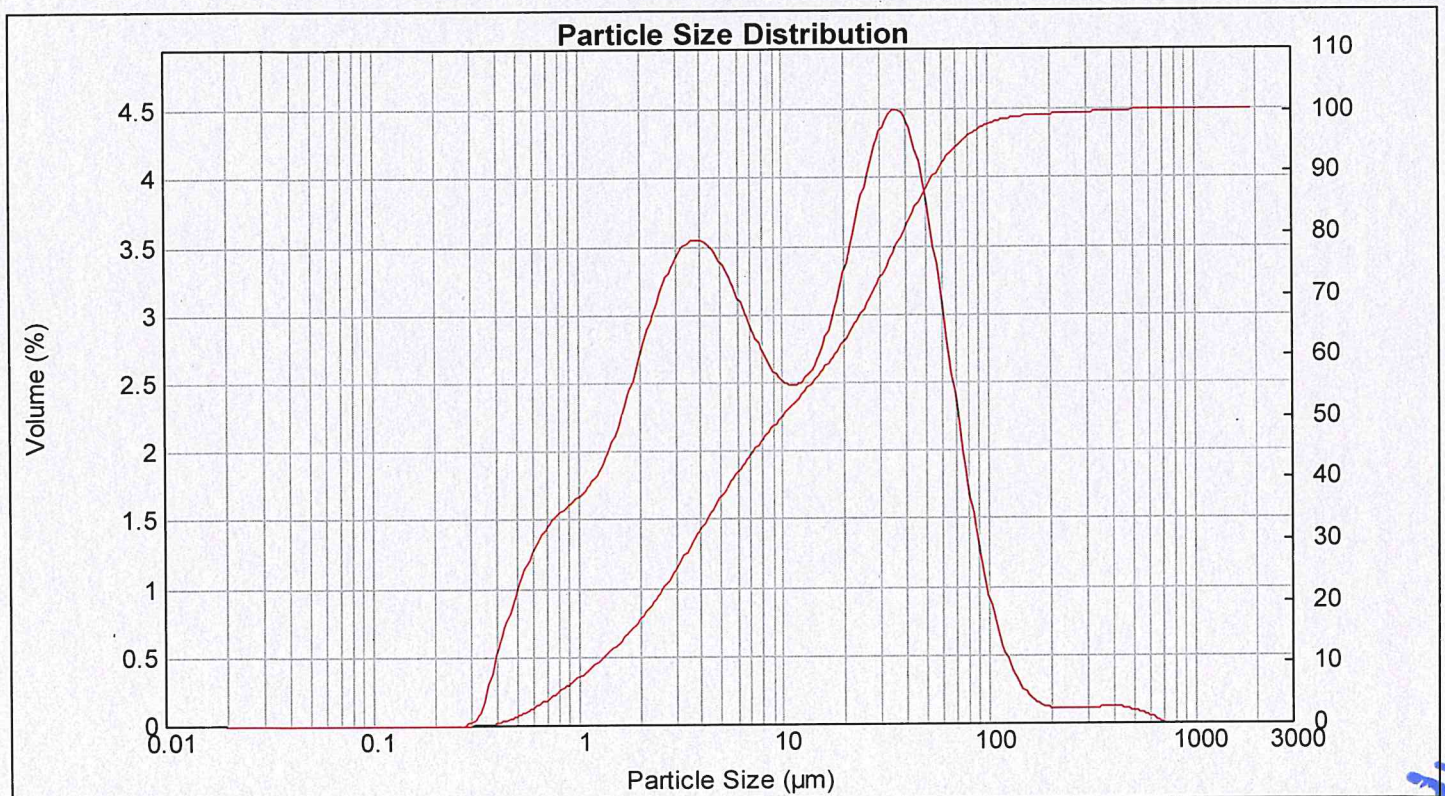
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.39 Residual (%) : 0.550
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0118 %Vol Specific Surface Area : 1.71 m²/g
Mean Diameters : D (0.1) : 1.24 um D (0.5) : 10.12 um D (0.9) : 57.65 um
D [4,3] : 24.09 um D [3,2] : 3.51 um Span : 5.575 Uniformity : 2.02

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.76	7.962	2.66	58.573	2.91	430.887	0.11
0.023	0.00	0.172	0.00	1.262	1.92	9.283	2.53	68.291	2.19	502.377	0.08
0.027	0.00	0.200	0.00	1.471	2.16	10.823	2.49	79.621	1.52	585.729	0.04
0.032	0.00	0.233	0.00	1.715	2.47	12.619	2.56	92.832	0.99	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.81	14.713	2.76	108.234	0.60	796.214	0.00
0.043	0.00	0.317	0.11	2.332	3.12	17.154	3.08	126.191	0.35	928.318	0.00
0.050	0.00	0.370	0.47	2.719	3.37	20.000	3.48	147.128	0.20	1082.339	0.00
0.059	0.00	0.431	0.78	3.170	3.52	23.318	3.92	171.539	0.13	1261.915	0.00
0.068	0.00	0.502	1.08	3.696	3.55	27.187	4.28	200.000	0.10	1471.285	0.00
0.080	0.00	0.586	1.31	4.309	3.48	31.698	4.49	233.183	0.10	1715.392	0.00
0.093	0.00	0.683	1.47	5.024	3.32	36.957	4.45	271.871	0.11	2000.000	0.00
0.108	0.00	0.796	1.57	5.857	3.10	43.089	4.14	316.979	0.11		
0.126	0.00	0.928	1.66	6.829	2.87	50.238	3.60	369.570	0.12		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 9

Sample Details

Sample ID : WPWB-3B1X_3

Measured : 21 มิถุนายน 2565 9:49:33

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163_175 of 182

Analysed : 21 มิถุนายน 2565 9:49:34

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

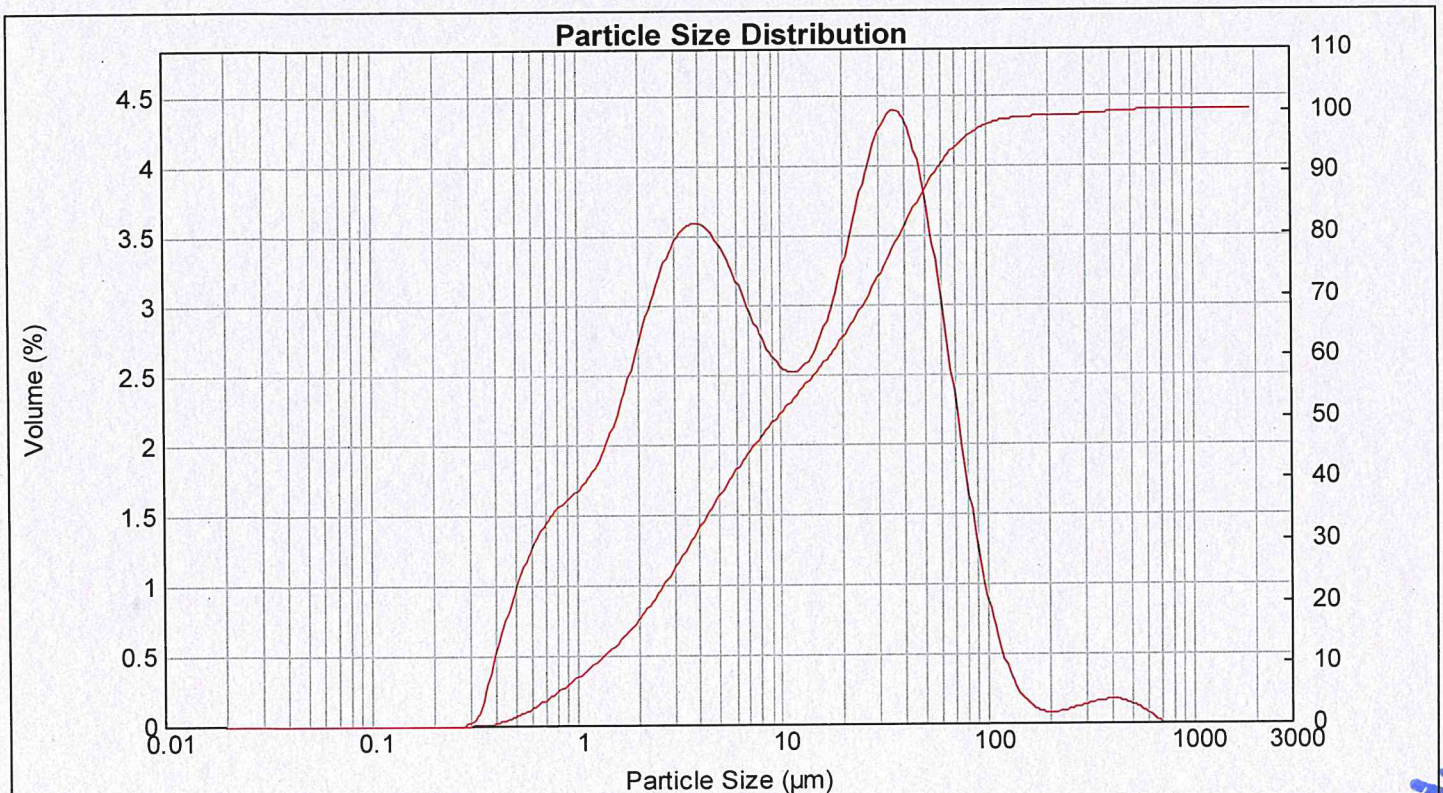
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.11 Residual (%) : 0.545
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0116 %Vol Specific Surface Area : 1.71 m²/g
Mean Diameters : D (0.1) : 1.24 um D (0.5) : 9.81 um D (0.9) : 57.36 um
D [4,3] : 24.5 um D [3,2] : 3.5 um Span : 5.724 Uniformity : 2.14

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.77	7.962	2.71	58.573	2.88	430.887	0.16
0.023	0.00	0.172	0.00	1.262	1.94	9.283	2.57	68.291	2.17	502.377	0.12
0.027	0.00	0.200	0.00	1.471	2.18	10.823	2.52	79.621	1.50	585.729	0.06
0.032	0.00	0.233	0.00	1.715	2.50	12.619	2.59	92.832	0.96	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.84	14.713	2.77	108.234	0.55	796.214	0.00
0.043	0.00	0.317	0.10	2.332	3.15	17.154	3.07	126.191	0.29	928.318	0.00
0.050	0.00	0.370	0.47	2.719	3.40	20.000	3.45	147.128	0.15	1082.339	0.00
0.059	0.00	0.431	0.78	3.170	3.56	23.318	3.86	171.539	0.09	1261.915	0.00
0.068	0.00	0.502	1.08	3.696	3.60	27.187	4.20	200.000	0.08	1471.285	0.00
0.080	0.00	0.586	1.30	4.309	3.53	31.698	4.35	233.183	0.10	1715.392	0.00
0.093	0.00	0.683	1.47	5.024	3.37	36.957	4.06	271.871	0.13	2000.000	0.00
0.108	0.00	0.796	1.58	5.857	3.15	43.089	3.54	316.979	0.16		
0.126	0.00	0.928	1.66	6.829	2.92	50.238		369.570			
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 10

Sample Details

Sample ID : WPWB-3B2X_1

Measured : 21 มิถุนายน 2565 10:01:54

Sample File : C:\Users\001827\Desktop\งานร\Technical service\Tetra
MTEC0884_65_163_175 of 182

Analysed : 21 มิถุนายน 2565 10:01:56

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

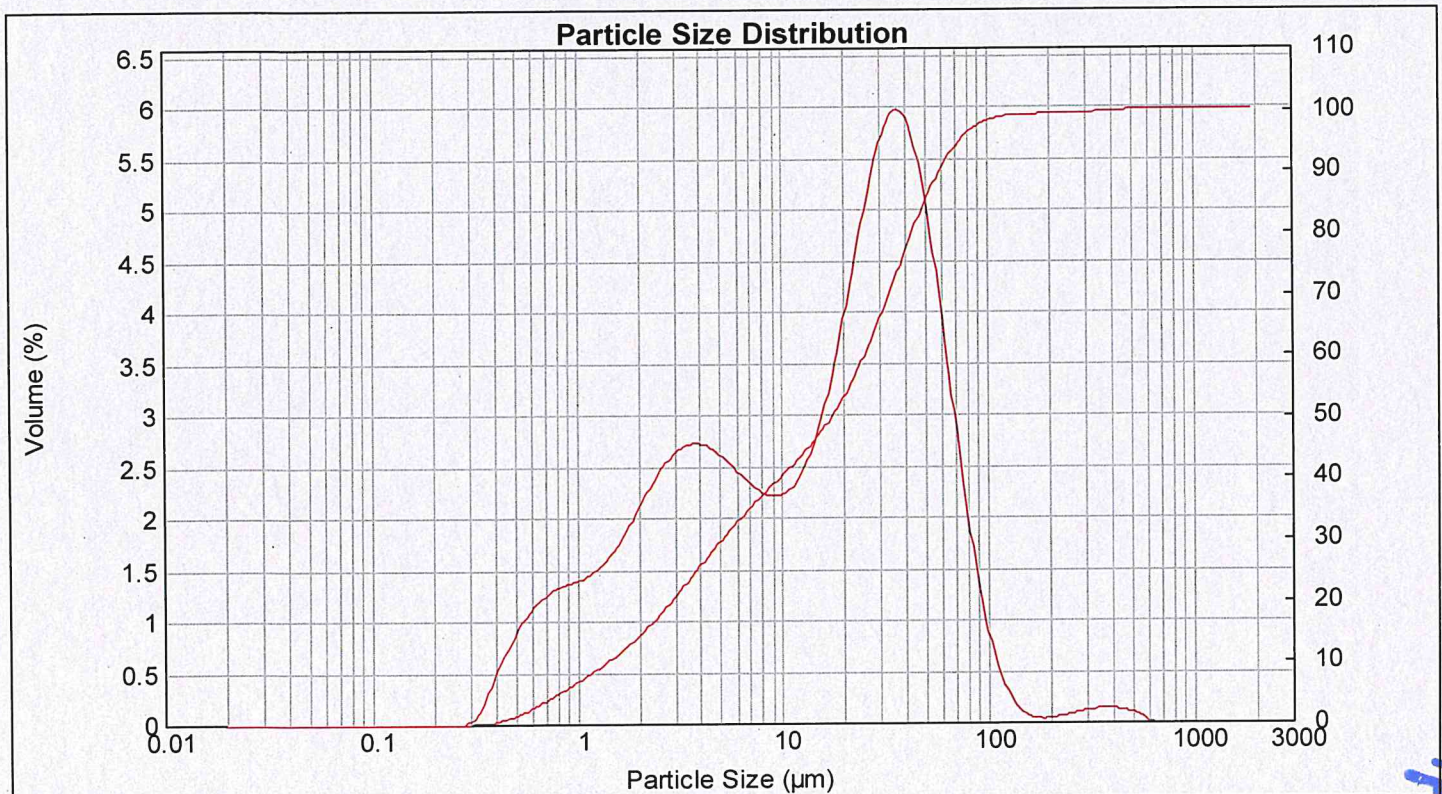
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.77 Residual (%) : 0.819
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0143 %Vol Specific Surface Area : 1.47 m²/g
Mean Diameters : D (0.1) : 1.41 um D (0.5) : 17.84 um D (0.9) : 59.52 um
D [4,3] : 26.94 um D [3,2] : 4.09 um Span : 3.256 Uniformity : 1.2

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.45	7.962	2.23	58.573	3.71	430.887	0.12
0.023	0.00	0.172	0.00	1.262	1.56	9.283	2.23	68.291	2.64	502.377	0.09
0.027	0.00	0.200	0.00	1.471	1.73	10.823	2.33	79.621	1.68	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.95	12.619	2.58	92.832	0.94	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.20	14.713	2.98	108.234	0.45	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.43	17.154	3.55	126.191	0.18	928.318	0.00
0.050	0.00	0.370	0.45	2.719	2.60	20.000	4.23	147.128	0.07	1082.339	0.00
0.059	0.00	0.431	0.72	3.170	2.71	23.318	4.95	171.539	0.04	1261.915	0.00
0.068	0.00	0.502	0.97	3.696	2.73	27.187	5.57	200.000	0.05	1471.285	0.00
0.080	0.00	0.586	1.15	4.309	2.68	31.698	5.94	233.183	0.08	1715.392	0.00
0.093	0.00	0.683	1.28	5.024	2.57	36.957	5.94	271.871	0.11	2000.000	0.00
0.108	0.00	0.796	1.35	5.857	2.44	43.089	5.51	316.979	0.13		
0.126	0.00	0.928	1.39	6.829	2.31	50.238	4.73	369.570	0.14		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 11

Sample Details

Sample ID : WPWB-3B2X_2

Measured : 21 มิถุนายน 2565 10:03:13

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
tech\B65MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:03:15

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

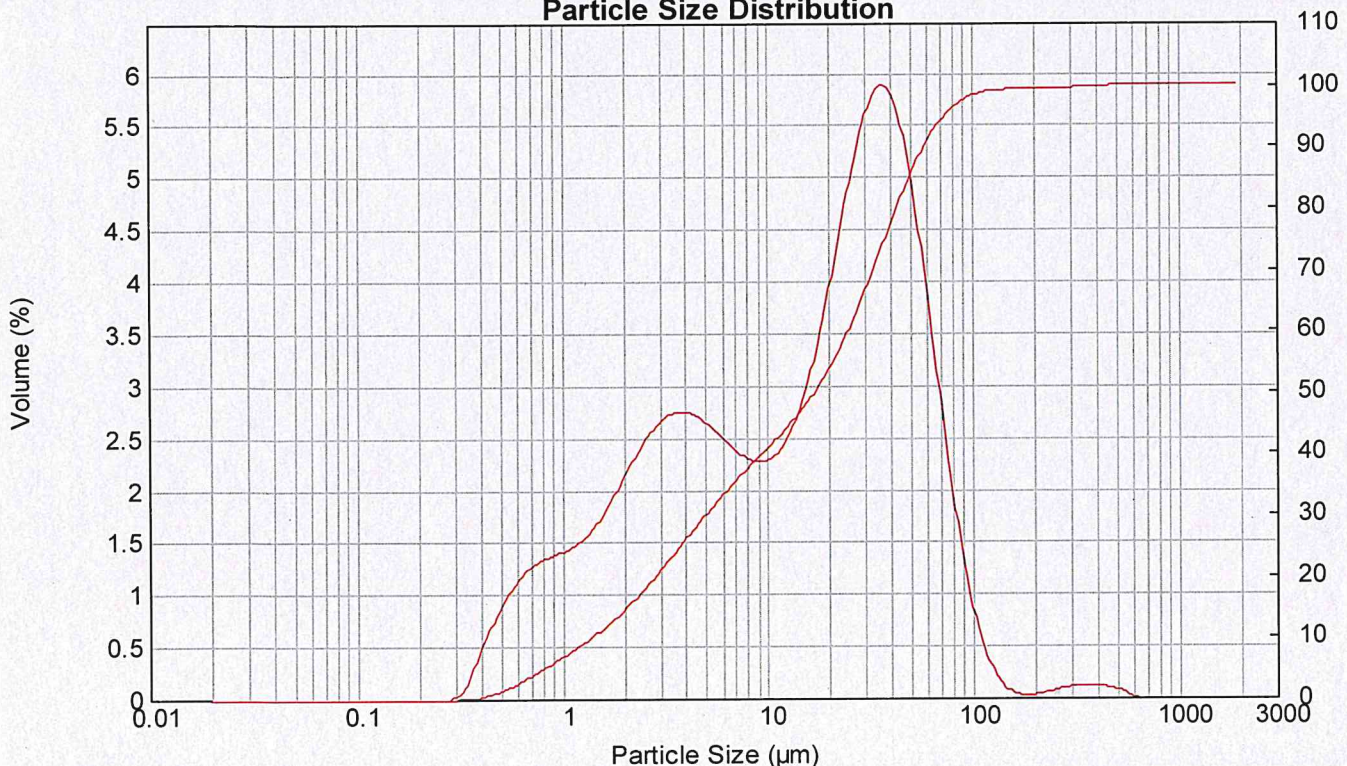
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.34 Residual (%) : 0.800
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0139 %Vol Specific Surface Area : 1.48 m²/g
Mean Diameters : D (0.1) : 1.4 um D (0.5) : 17.3 um D (0.9) : 58.96 um
D [4,3] : 26.38 um D [3,2] : 4.06 um Span : 3.327 Uniformity : 1.21

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.47	7.962	2.29	58.573	3.64	430.887	0.10
0.023	0.00	0.172	0.00	1.262	1.58	9.283	2.29	68.291	2.59	502.377	0.07
0.027	0.00	0.200	0.00	1.471	1.75	10.823	2.39	79.621	1.65	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.98	12.619	2.63	92.832	0.93	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.22	14.713	3.03	108.234	0.44	796.214	0.00
0.043	0.00	0.317	0.12	2.332	2.45	17.154	3.57	126.191	0.17	928.318	0.00
0.050	0.00	0.370	0.44	2.719	2.63	20.000	4.23	147.128	0.06	1082.339	0.00
0.059	0.00	0.431	0.71	3.170	2.73	23.318	4.92	171.539	0.03	1261.915	0.00
0.068	0.00	0.502	0.97	3.696	2.76	27.187	5.51	200.000	0.05	1471.285	0.00
0.080	0.00	0.586	1.16	4.309	2.71	31.698	5.86	233.183	0.11	1715.392	0.00
0.093	0.00	0.683	1.28	5.024	2.61	36.957	5.84	271.871	0.13	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.48	43.089	5.42	316.979	0.12		
0.126	0.00	0.928	1.41	6.829	2.37	50.238	4.64	369.570			
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 12

Sample Details

Sample ID : WPWB-3B2X_3

Measured : 21 มิถุนายน 2565 10:04:48

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MAL1021434_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:04:50

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

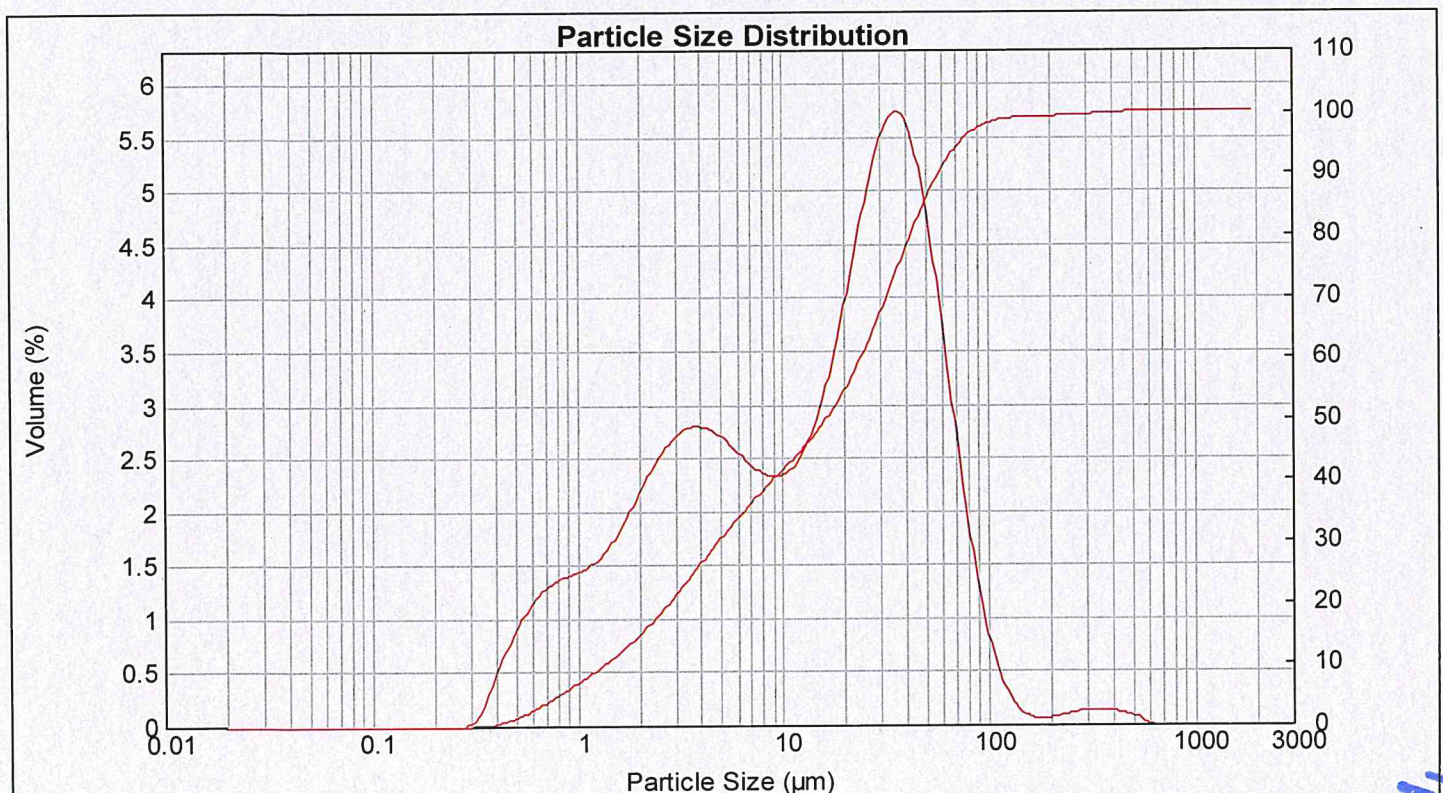
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.01 Residual (%) : 0.773
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0134 %Vol Specific Surface Area : 1.5 m²/g
Mean Diameters : D (0.1) : 1.38 um D (0.5) : 16.61 um D (0.9) : 58.82 um
D [4,3] : 26.43 um D [3,2] : 4 um Span : 3.458 Uniformity : 1.28

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.49	7.962	2.34	58.573	3.51	430.887	0.11
0.023	0.00	0.172	0.00	1.262	1.60	9.283	2.34	68.291	2.50	502.377	0.07
0.027	0.00	0.200	0.00	1.471	1.60	10.823	2.44	79.621	1.60	585.729	0.00
0.032	0.00	0.233	0.00	1.715	2.01	12.619	2.67	92.832	0.91	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.26	14.713	3.05	108.234	0.45	796.214	0.00
0.043	0.00	0.317	0.12	2.332	2.49	17.154	3.58	126.191	0.20	928.318	0.00
0.050	0.00	0.370	0.45	2.719	2.67	20.000	4.21	147.128	0.09	1082.339	0.00
0.059	0.00	0.431	0.72	3.170	2.78	23.318	4.86	171.539	0.07	1261.915	0.00
0.068	0.00	0.502	0.98	3.696	2.80	27.187	5.41	200.000	0.08	1471.285	0.00
0.080	0.00	0.586	1.17	4.309	2.76	31.698	5.72	233.183	0.11	1715.392	0.00
0.093	0.00	0.683	1.30	5.024	2.66	36.957	5.68	271.871	0.13	2000.000	0.00
0.108	0.00	0.796	1.38	5.857	2.53	43.089	5.25	316.979	0.14		
0.126	0.00	0.928	1.43	6.829	2.42	50.238	4.49	369.570	0.14		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 13

Sample Details

Sample ID : WPWB-3B3X_1

Measured : 21 มิถุนายน 2565 10:12:04

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163-175 of 102

Analysed : 21 มิถุนายน 2565 10:12:05

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

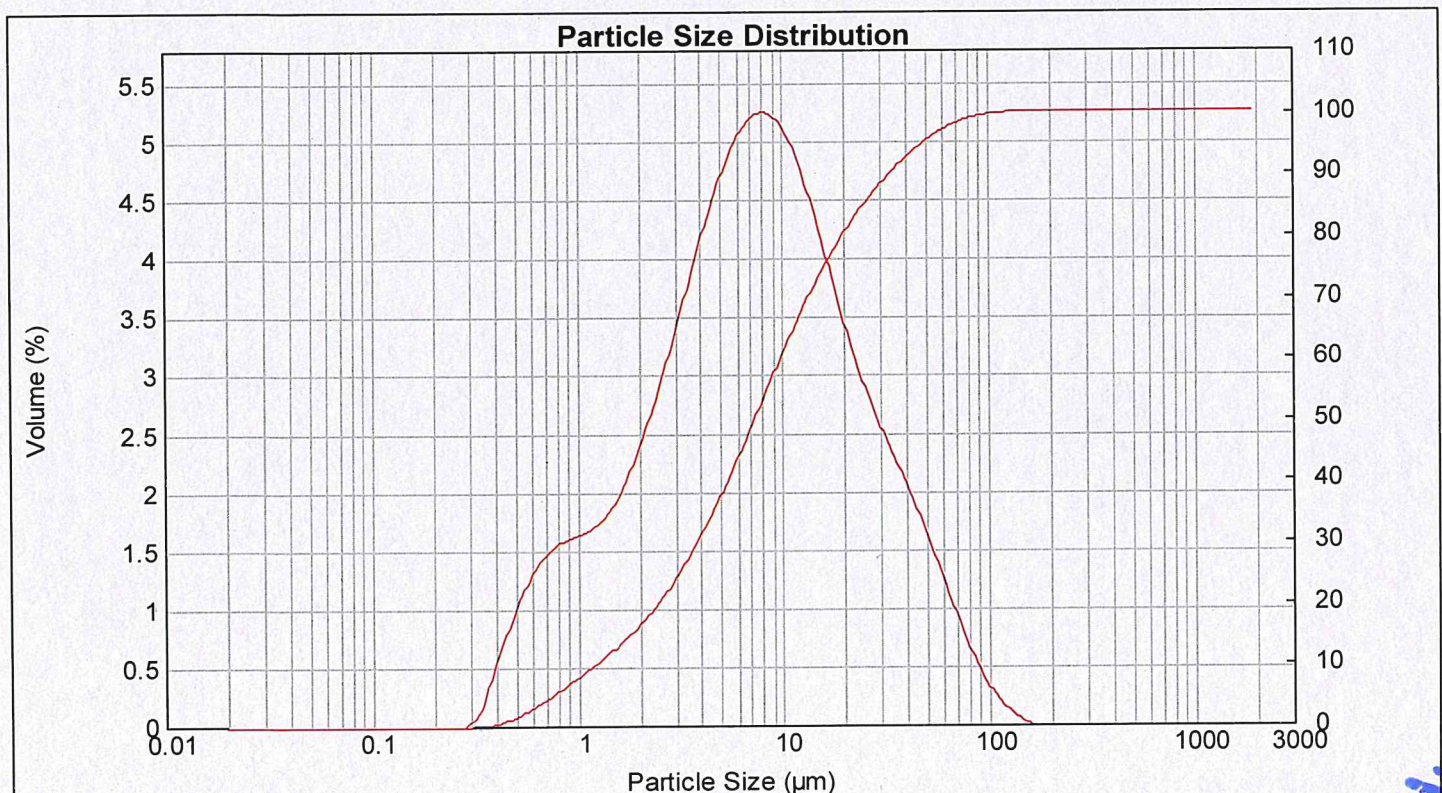
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.51 Residual (%) : 1.142
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0120 %Vol Specific Surface Area : 1.8 m²/g
Mean Diameters : D (0.1) : 1.23 um D (0.5) : 7.43 um D (0.9) : 33.82 um
D [4,3] : 13.49 um D [3,2] : 3.33 um Span : 4.388 Uniformity : 1.36

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.68	7.962	5.26	58.573	1.18	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.77	9.283	5.15	68.291	0.86	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.94	10.823	4.91	79.621	0.58	585.729	0.00
0.032	0.00	0.233	0.00	1.715	2.19	12.619	4.56	92.832	0.35	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.51	14.713	4.14	108.234	0.19	796.214	0.00
0.043	0.00	0.317	0.14	2.332	2.88	17.154	3.70	126.191	0.08	928.318	0.00
0.050	0.00	0.370	0.50	2.719	3.29	20.000	3.29	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.81	3.170	3.71	23.318	2.93	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.11	3.696	4.13	27.187	2.62	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.34	4.309	4.52	31.698	2.36	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.49	5.024	4.85	36.957	2.09	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.58	5.857	5.10	43.089	1.81	316.979	0.00		
0.126	0.00	0.928	1.63	6.829	5.24	50.238	1.50	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 14

Sample Details

Sample ID : WPWB-3B3X_2

Measured : 21 มิถุนายน 2565 10:13:23

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:13:24

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

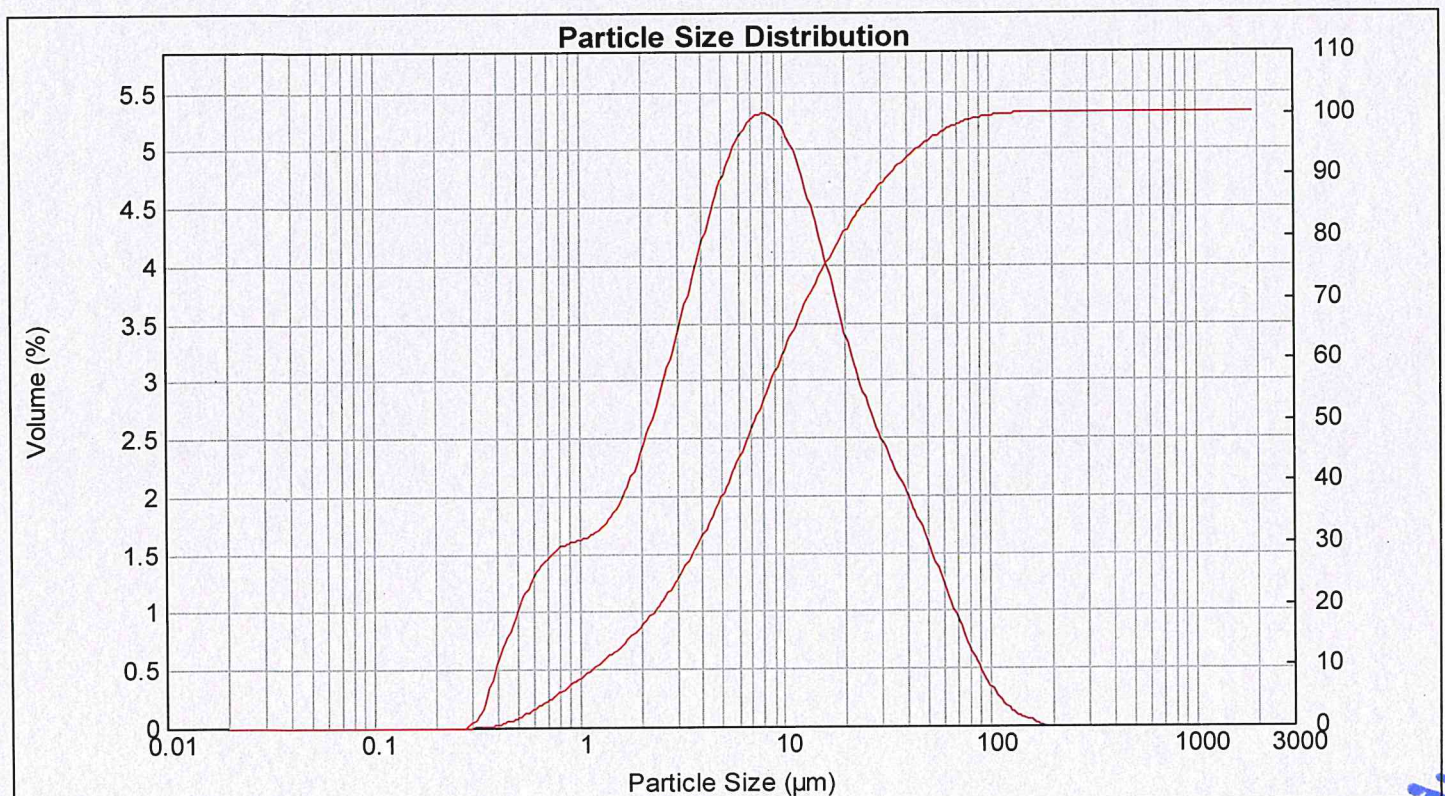
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.19 Residual (%) : 1.203
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0117 %Vol Specific Surface Area : 1.8 m²/g
Mean Diameters : D (0.1) : 1.23 um D (0.5) : 7.4 um D (0.9) : 33.7 um
D [4,3] : 13.53 um D [3,2] : 3.33 um Span : 4.387 Uniformity : 1.37

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.67	7.962	5.32	58.573	1.17	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.76	9.283	5.20	68.291	0.87	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.76	10.823	4.95	79.621	0.59	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.93	12.619	4.58	92.832	0.37	682.910	0.00
0.037	0.00	0.272	0.00	2.000	2.18	14.713	4.13	108.234	0.21	796.214	0.00
0.043	0.00	0.317	0.01	2.332	2.50	17.154	3.67	126.191	0.10	928.318	0.00
0.050	0.00	0.370	0.14	2.719	2.87	20.000	3.24	147.128	0.06	1082.339	0.00
0.059	0.00	0.431	0.50	3.170	3.28	23.318	2.87	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.81	3.696	3.72	27.187	2.56	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.11	4.309	4.14	31.698	2.29	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.34	5.024	4.55	36.957	2.04	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.49	5.857	4.89	43.089	1.77	316.979	0.00		
0.126	0.00	0.928	1.57	6.829	5.15	50.238	1.48	369.570	0.00		
0.147	0.00	1.082	1.62	7.962	5.30	58.573		430.887	0.00		



Result : Analysis Report

Attached page 15

Sample Details

Sample ID : WPWB-3B3X_3

Measured : 21 มิถุนายน 2565 10:14:58

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:14:59

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

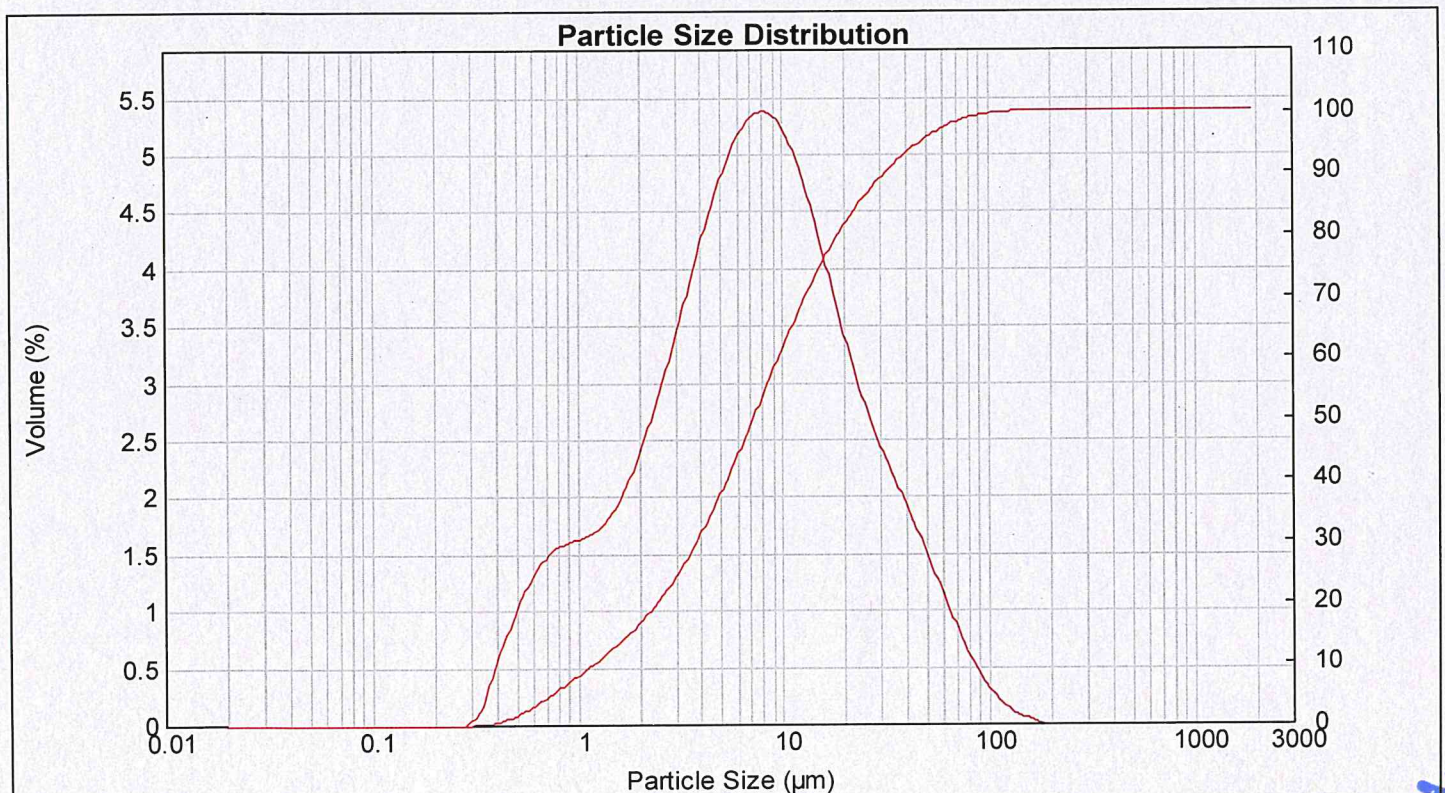
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.96 Residual (%) : 1.143
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0115 %Vol Specific Surface Area : 1.82 m²/g
Mean Diameters : D (0.1) : 1.23 um D (0.5) : 7.31 um D (0.9) : 32.29 um
D [4,3] : 13.15 um D [3,2] : 3.3 um Span : 4.247 Uniformity : 1.34

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.68	7.962	5.39	58.573	1.07	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.77	9.283	5.26	68.291	0.79	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.94	10.823	5.00	79.621	0.53	585.729	0.00
0.032	0.00	0.233	0.00	1.715	2.19	12.619	4.62	92.832	0.33	682.910	0.00
0.037	0.00	0.272	0.00	2.000	2.51	14.713	4.17	108.234	0.19	796.214	0.00
0.043	0.00	0.317	0.01	2.332	2.89	17.154	3.69	126.191	0.09	928.318	0.00
0.050	0.00	0.370	0.14	2.719	3.31	20.000	3.24	147.128	0.05	1082.339	0.00
0.059	0.00	0.431	0.51	3.170	3.75	23.318	2.85	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.82	3.696	4.19	27.187	2.52	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.12	4.309	4.60	31.698	1.95	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.35	5.024	4.95	36.957	1.67	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.58	5.857	5.21	43.089	1.38	316.979	0.00		
0.126	0.00	0.928	1.63	6.829	5.37	50.238		369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 16

Sample Details

Sample ID : WPWB-3C1_1

Measured : 21 มิถุนายน 2565 10:25:17

Sample File : C:\Users\001827\Desktop\งานร\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:25:19

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

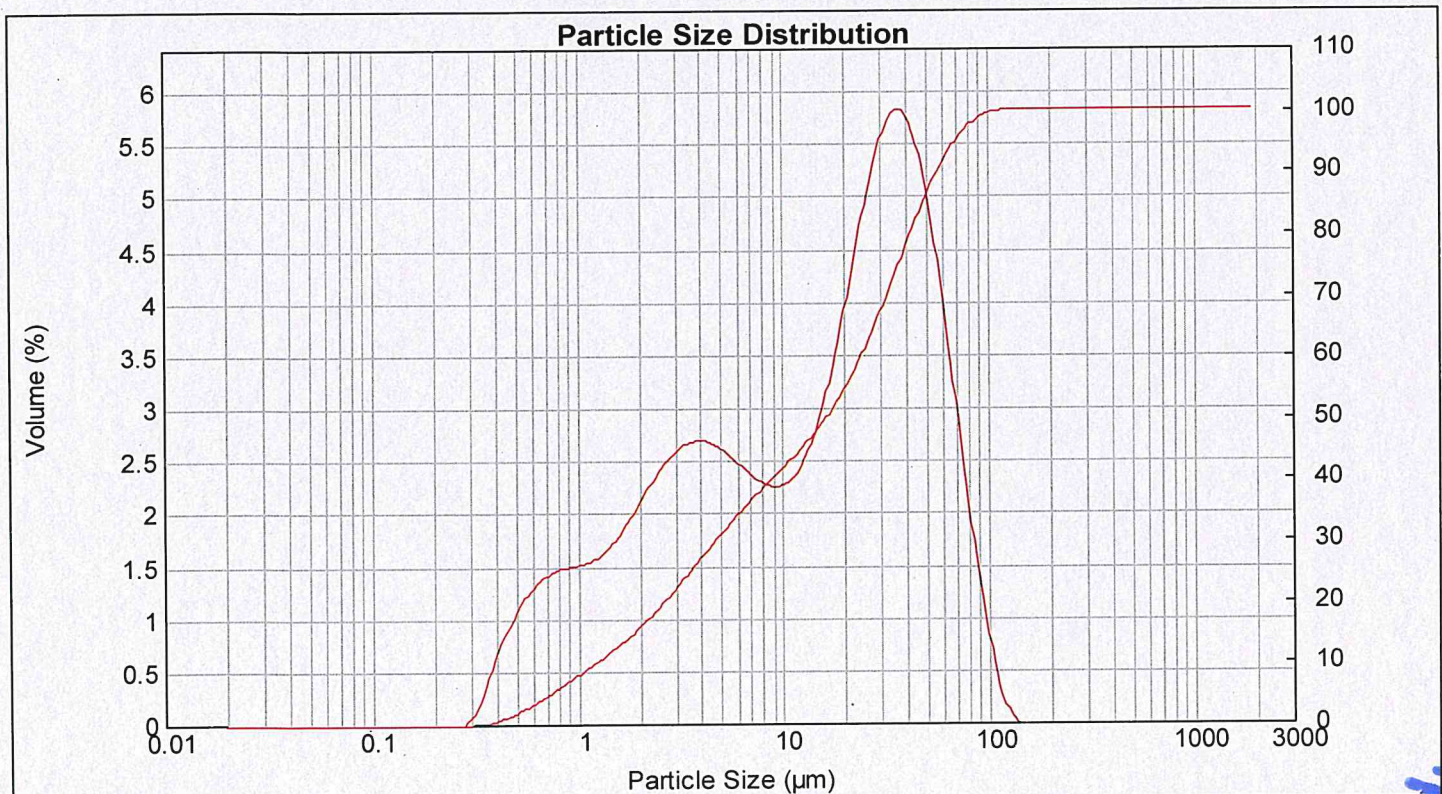
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.05 Residual (%) : 0.424
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0137 %Vol Specific Surface Area : 1.61 m²/g
Mean Diameters : D (0.1) : 1.24 um D (0.5) : 16.54 um D (0.9) : 57.3 um
D [4,3] : 23.56 um D [3,2] : 3.72 um Span : 3.389 Uniformity : 1.11

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.55	7.962	2.28	58.573	3.75	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.63	9.283	2.27	68.291	2.71	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.78	10.823	2.37	79.621	1.71	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.98	12.619	2.62	92.832	0.91	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.19	14.713	3.02	108.234	0.26	796.214	0.00
0.043	0.00	0.317	0.23	2.332	2.40	17.154	3.57	126.191	0.03	928.318	0.00
0.050	0.00	0.370	0.62	2.719	2.56	20.000	4.23	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.90	3.170	2.67	23.318	4.89	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.15	3.696	2.70	27.187	5.46	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.32	4.309	2.67	31.698	5.79	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.43	5.024	2.58	36.957	5.79	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.48	5.857	2.47	43.089	5.42	316.979	0.00		
0.126	0.00	0.928	1.51	6.829	2.36	50.238	4.71	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 17

Sample Details

Sample ID : WPWB-3C1_2

Measured : 21 มิถุนายน 2565 10:26:05

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:26:07

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

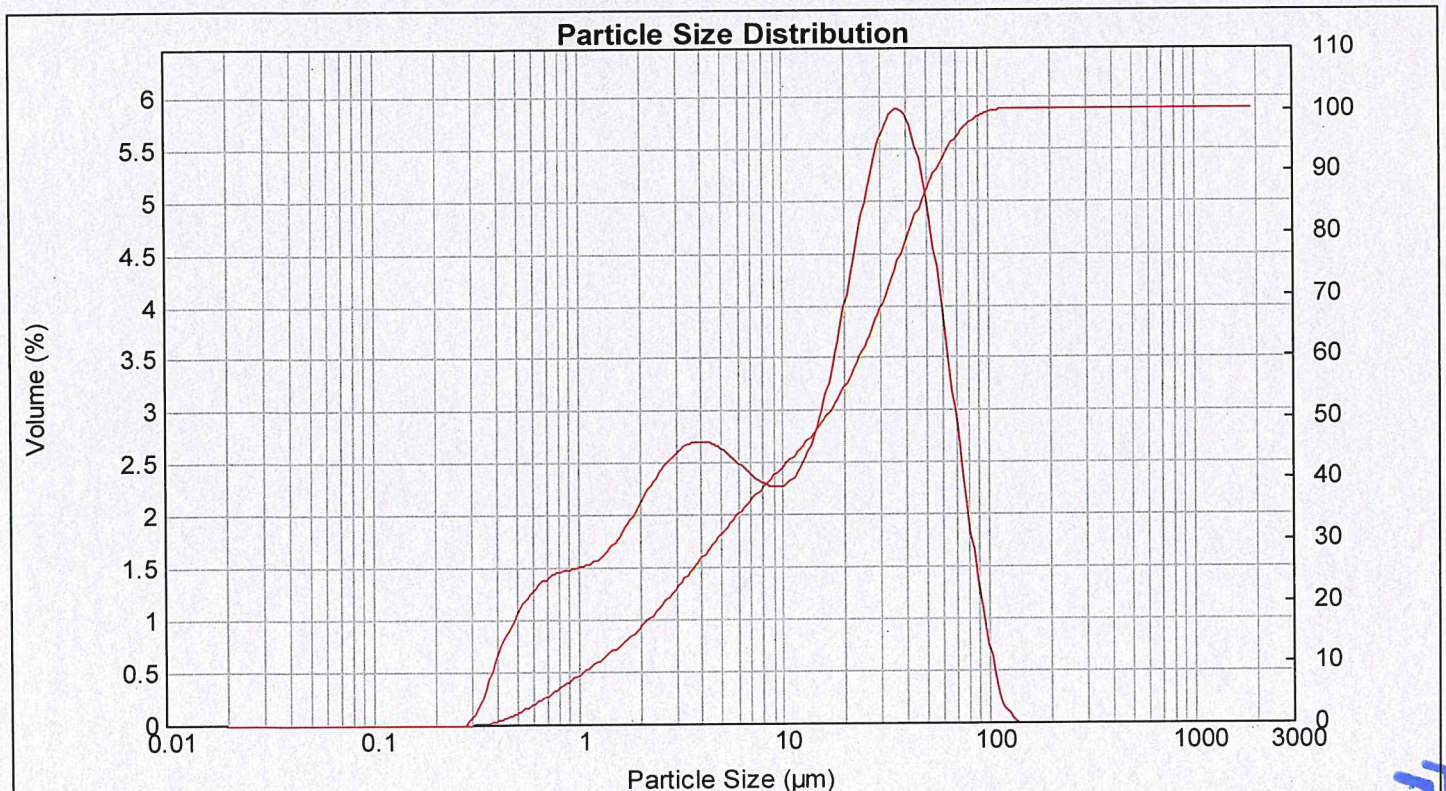
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.79 Residual (%) : 0.423
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0135 %Vol Specific Surface Area : 1.6 m²/g
Mean Diameters : D (0.1) : 1.25 um D (0.5) : 16.48 um D (0.9) : 56.56 um
D [4,3] : 23.32 um D [3,2] : 3.74 um Span : 3.356 Uniformity : 1.11

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.54	7.962	2.29	58.573	3.69	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.63	9.283	2.28	68.291	2.63	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.63	10.823	2.38	79.621	1.62	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.98	12.619	2.63	92.832	0.84	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.20	14.713	3.04	108.234	0.20	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.40	17.154	3.60	126.191	0.02	928.318	0.00
0.050	0.00	0.370	0.61	2.719	2.57	20.000	4.27	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.89	3.170	2.68	23.318	4.96	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.14	3.696	2.72	27.187	5.52	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.31	4.309	2.69	31.698	5.83	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.42	5.024	2.61	36.957	5.43	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.47	5.857	2.49	43.089	4.68	316.979	0.00		
0.126	0.00	0.928	1.50	6.829	2.37	50.238		369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 18

Sample Details

Sample ID : WPWB-3C1_3

Measured : 21 มิถุนายน 2565 10:29:32

Sample File : C:\Users\001827\Desktop\งานเทร\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:29:33

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

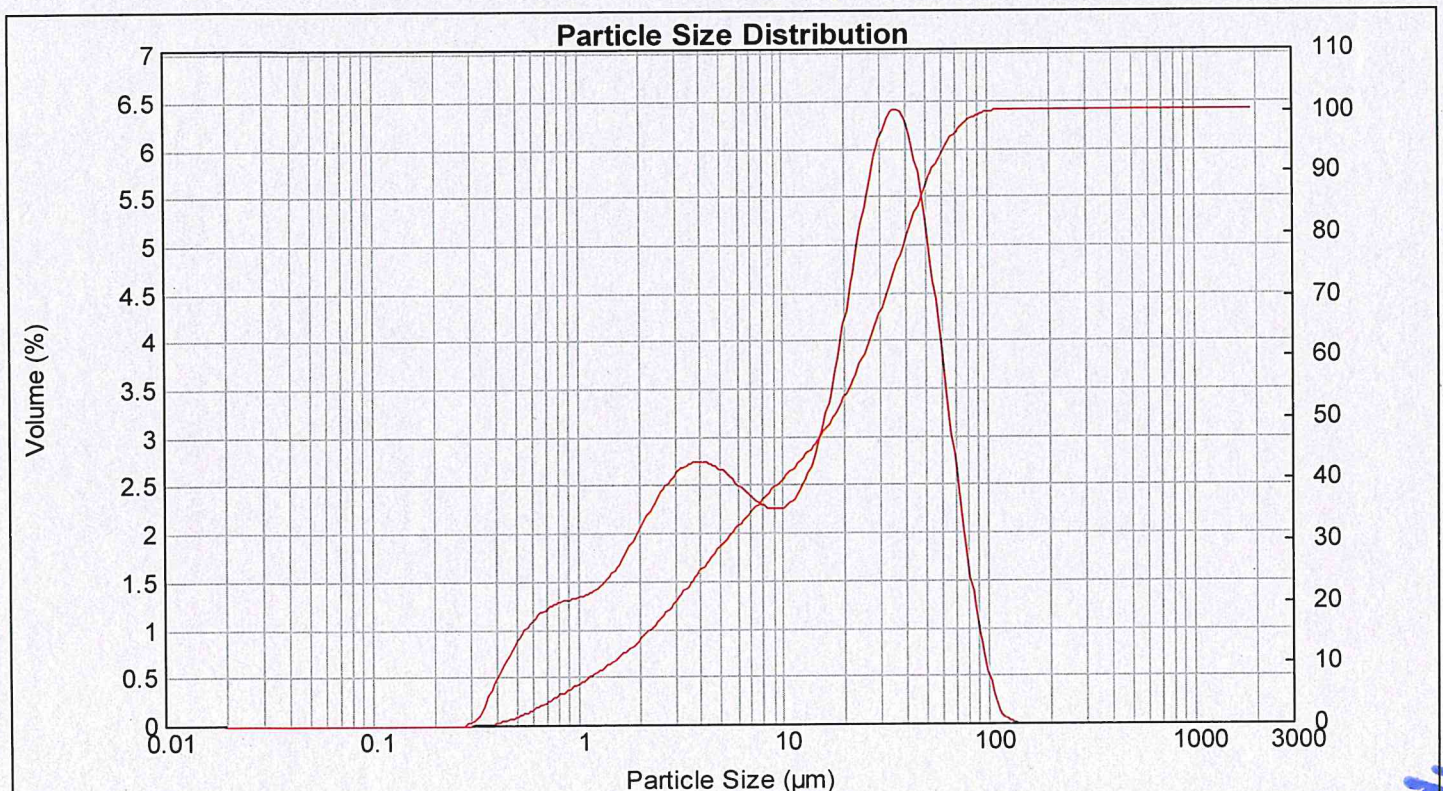
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.07 Residual (%) : 0.906
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0140 %Vol Specific Surface Area : 1.44 m²/g
Mean Diameters : D (0.1) : 1.46 um D (0.5) : 17.9 um D (0.9) : 54.84 um
D [4,3] : 23.42 um D [3,2] : 4.16 um Span : 2.982 Uniformity : 0.989

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.38	7.962	2.27	58.573	3.61	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.48	9.283	2.26	68.291	2.40	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.48	10.823	2.37	79.621	1.34	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.65	12.619	2.65	92.832	0.60	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.13	14.713	3.10	108.234	0.11	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.38	17.154	3.74	126.191	0.01	928.318	0.00
0.050	0.00	0.370	0.44	2.719	2.58	20.000	4.52	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.71	3.170	2.70	23.318	5.33	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.95	3.696	2.75	27.187	6.01	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.13	4.309	2.72	31.698	6.39	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.24	5.024	2.63	36.957	6.32	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.30	5.857	2.49	43.089	5.77	316.979	0.00		
0.126	0.00	0.928	1.33	6.829	2.36	50.238	4.81	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 19

Sample Details

Sample ID : WPWB-3C2_1

Measured : 21 มิถุนายน 2565 10:37:25

Sample File : C:\Users\001827\Desktop\งานเทคนิค\Technical service\Tetra
MTEC0884_65_163-175 of 102

Analysed : 21 มิถุนายน 2565 10:37:27

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

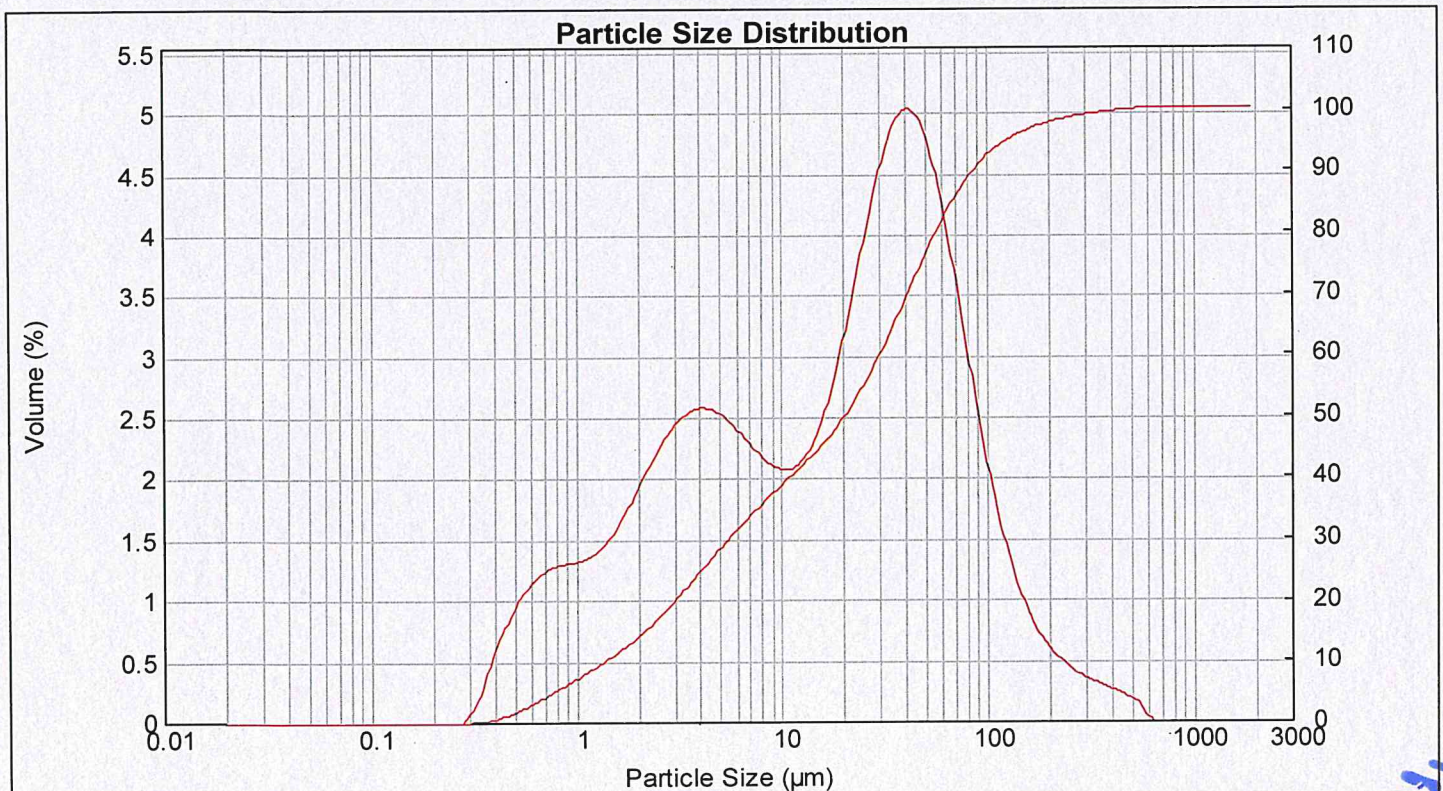
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.13 Residual (%) : 0.392
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0152 %Vol Specific Surface Area : 1.45 m²/g
Mean Diameters : D (0.1) : 1.4 um D (0.5) : 20.76 um D (0.9) : 87.95 um
D [4,3] : 38.28 um D [3,2] : 4.13 um Span : 4.169 Uniformity : 1.55

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.36	7.962	2.15	58.573	4.13	430.887	0.22
0.023	0.00	0.172	0.00	1.262	1.44	9.283	2.09	68.291	3.49	502.377	0.16
0.027	0.00	0.200	0.00	1.471	1.59	10.823	2.10	79.621	2.82	585.729	0.01
0.032	0.00	0.233	0.00	1.715	1.79	12.619	2.22	92.832	2.19	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.01	14.713	2.47	108.234	1.66	796.214	0.00
0.043	0.00	0.317	0.02	2.332	2.23	17.154	2.86	126.191	1.24	928.318	0.00
0.050	0.00	0.370	0.20	2.719	2.41	20.000	3.35	147.128	0.92	1082.339	0.00
0.059	0.00	0.431	0.55	3.170	2.53	23.318	3.91	171.539	0.71	1261.915	0.00
0.068	0.00	0.502	0.80	3.696	2.59	27.187	4.44	200.000	0.56	1471.285	0.00
0.080	0.00	0.586	1.02	4.309	2.57	31.698	4.85	233.183	0.45	1715.392	0.00
0.093	0.00	0.683	1.17	5.024	2.50	36.957	5.04	271.871	0.38	2000.000	0.00
0.108	0.00	0.796	1.26	5.857	2.39	43.089	4.98	316.979	0.32		
0.126	0.00	0.928	1.30	6.829	2.27	50.238	4.66	369.570	0.27		
0.147	0.00	1.082	1.32	7.962	2.27	58.573		430.887			



Result : Analysis Report

Attached page 20

Sample Details

Sample ID : WPWB-3C2_2

Measured : 21 มิถุนายน 2565 10:38:45

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163_175 of 182

Analysed : 21 มิถุนายน 2565 10:38:47

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

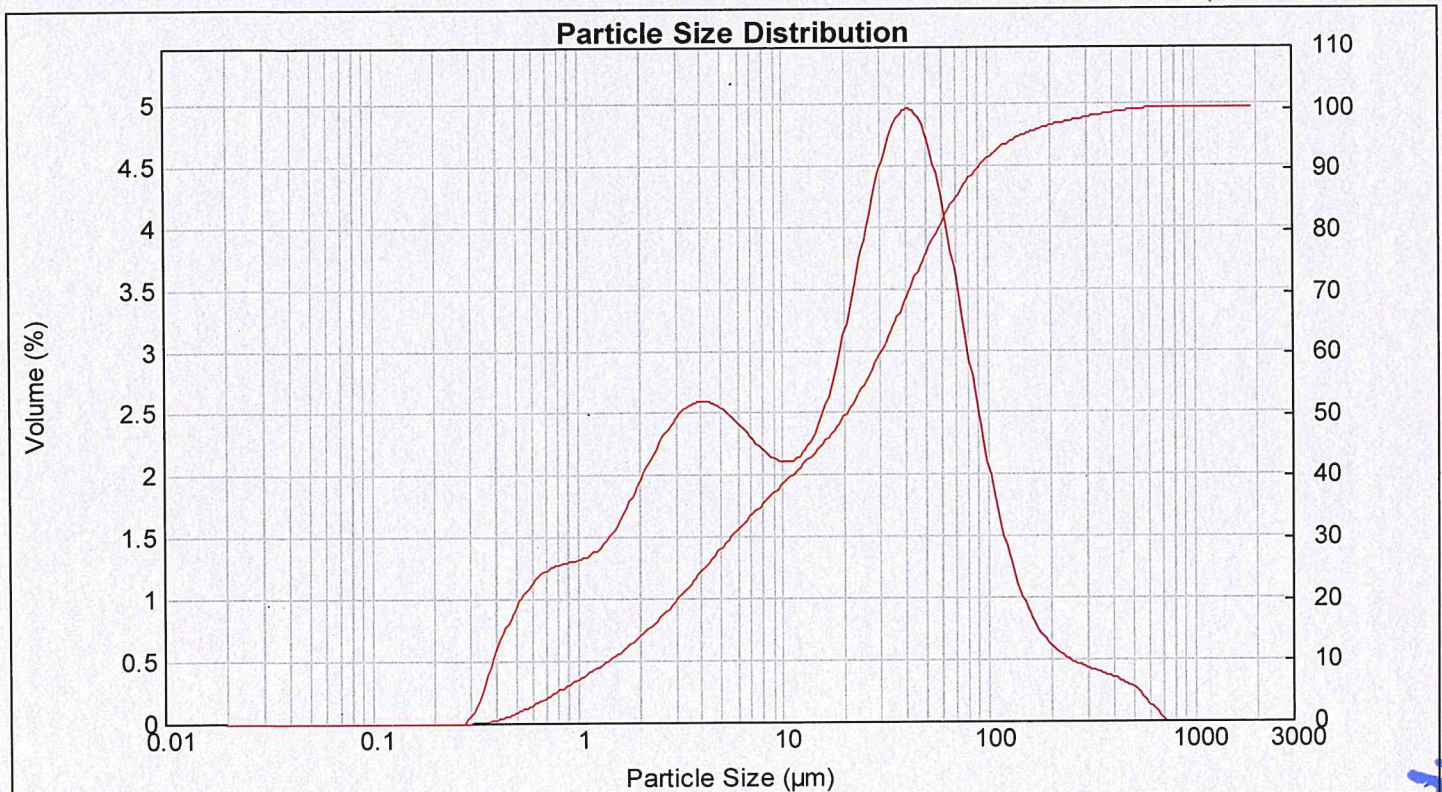
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.73 Residual (%) : 0.398
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0149 %Vol Specific Surface Area : 1.44 m²/g
Mean Diameters : D (0.1) : 1.42 um D (0.5) : 20.62 um D (0.9) : 90.11 um
D [4,3] : 40.37 um D [3,2] : 4.16 um Span : 4.300 Uniformity : 1.66

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.36	7.962	2.17	58.573	4.08	430.887	0.31
0.023	0.00	0.172	0.00	1.262	1.45	9.283	2.11	68.291	3.45	502.377	0.24
0.027	0.00	0.200	0.00	1.471	1.45	10.823	2.13	79.621	2.78	585.729	0.12
0.032	0.00	0.233	0.00	1.715	1.80	12.619	2.25	92.832	2.15	682.910	0.01
0.037	0.00	0.272	0.02	2.000	2.02	14.713	2.49	108.234	1.62	796.214	0.00
0.043	0.00	0.317	0.19	2.332	2.24	17.154	2.86	126.191	1.20	928.318	0.00
0.050	0.00	0.370	0.54	2.719	2.54	20.000	3.34	147.128	0.90	1082.339	0.00
0.059	0.00	0.431	0.79	3.170	2.60	23.318	3.87	171.539	0.70	1261.915	0.00
0.068	0.00	0.502	1.01	3.696	2.58	27.187	4.38	200.000	0.57	1471.285	0.00
0.080	0.00	0.586	1.15	4.309	2.51	31.698	4.77	233.183	0.50	1715.392	0.00
0.093	0.00	0.683	1.25	5.024	2.41	36.957	4.96	271.871	0.44	2000.000	0.00
0.108	0.00	0.796	1.29	5.857	2.28	43.089	4.59	316.979	0.40		
0.126	0.00	0.928	1.32	6.829		50.238		369.570	0.36		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 21

Sample Details

Sample ID : WPWB-3C2_3

Measured : 21 มิถุนายน 2565 10:40:05

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:40:07

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

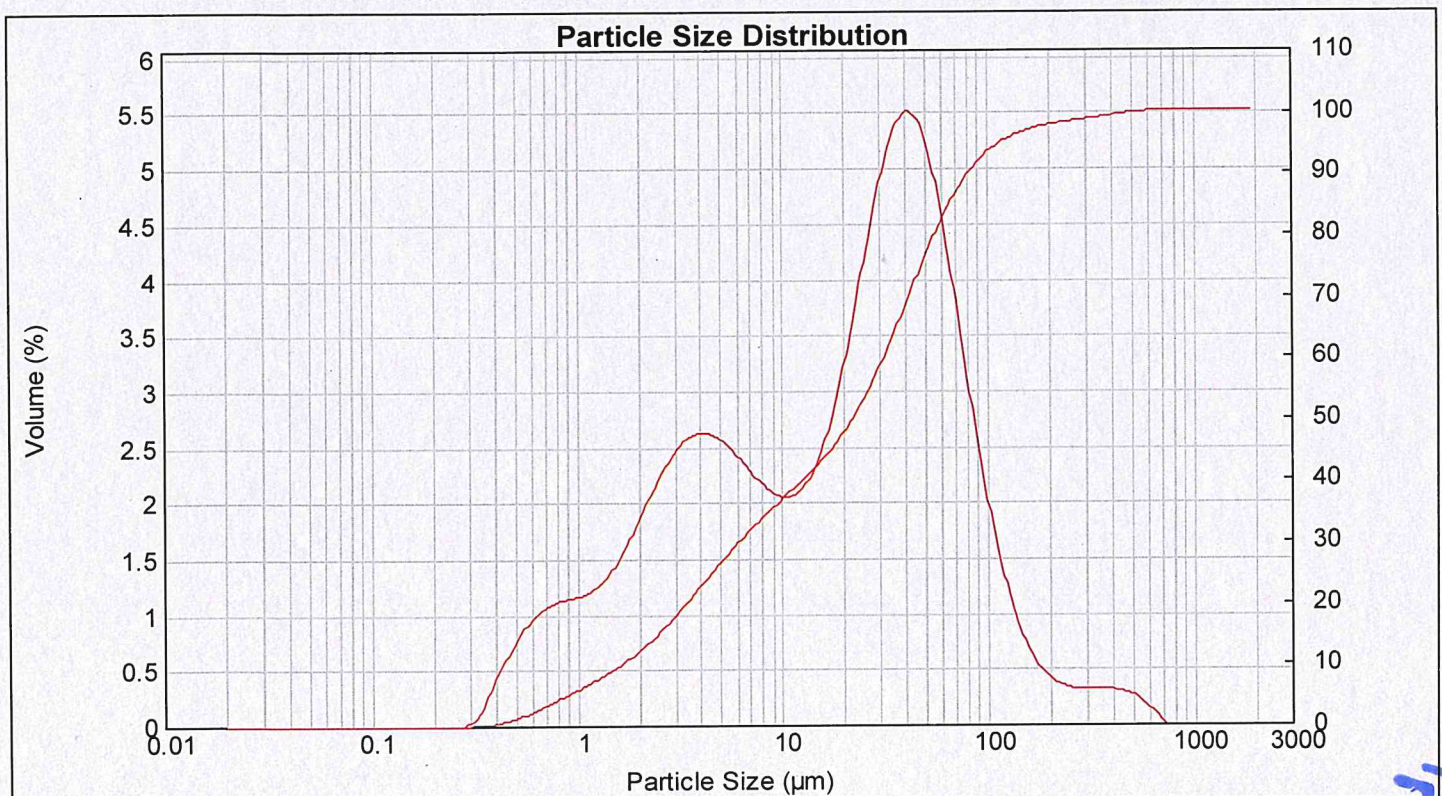
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.47 Residual (%) : 0.819
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0159 %Vol Specific Surface Area : 1.29 m²/g
Mean Diameters : D (0.1) : 1.67 um D (0.5) : 22.51 um D (0.9) : 83.31 um
D [4,3] : 38.97 um D [3,2] : 4.65 um Span : 3.627 Uniformity : 1.42

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.20	7.962	2.13	58.573	4.42	430.887	0.29
0.023	0.00	0.172	0.00	1.262	1.30	9.283	2.06	68.291	3.64	502.377	0.23
0.027	0.00	0.200	0.00	1.471	1.30	10.823	2.08	79.621	2.83	585.729	0.13
0.032	0.00	0.233	0.00	1.715	1.46	12.619	2.21	92.832	2.09	682.910	0.01
0.037	0.00	0.272	0.00	2.000	1.69	14.713	2.21	108.234	1.47	796.214	0.00
0.043	0.00	0.317	0.01	2.332	1.95	17.154	2.48	126.191	1.01	928.318	0.00
0.050	0.00	0.370	0.11	2.719	2.20	20.000	2.91	147.128	0.69	1082.339	0.00
0.059	0.00	0.431	0.39	3.170	2.41	23.318	3.48	171.539	0.49	1261.915	0.00
0.068	0.00	0.502	0.62	3.696	2.56	27.187	4.12	200.000	0.38	1471.285	0.00
0.080	0.00	0.586	0.83	4.309	2.63	31.698	4.76	233.183	0.33	1715.392	0.00
0.093	0.00	0.683	0.98	5.024	2.61	36.957	5.26	271.871	0.32	2000.000	0.00
0.108	0.00	0.796	1.08	5.857	2.53	43.089	5.51	316.979	0.32		
0.126	0.00	0.928	1.13	6.829	2.40	50.238	5.45	369.570	0.32		
0.147	0.00	1.082	1.16	7.962	2.26	58.573	5.06	430.887	0.32		



Result : Analysis Report

Attached page 22

Sample Details

Sample ID : WPWB-3C3_1

Measured : 21 มิถุนายน 2565 10:49:49

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163_175 of 182

Analysed : 21 มิถุนายน 2565 10:49:50

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

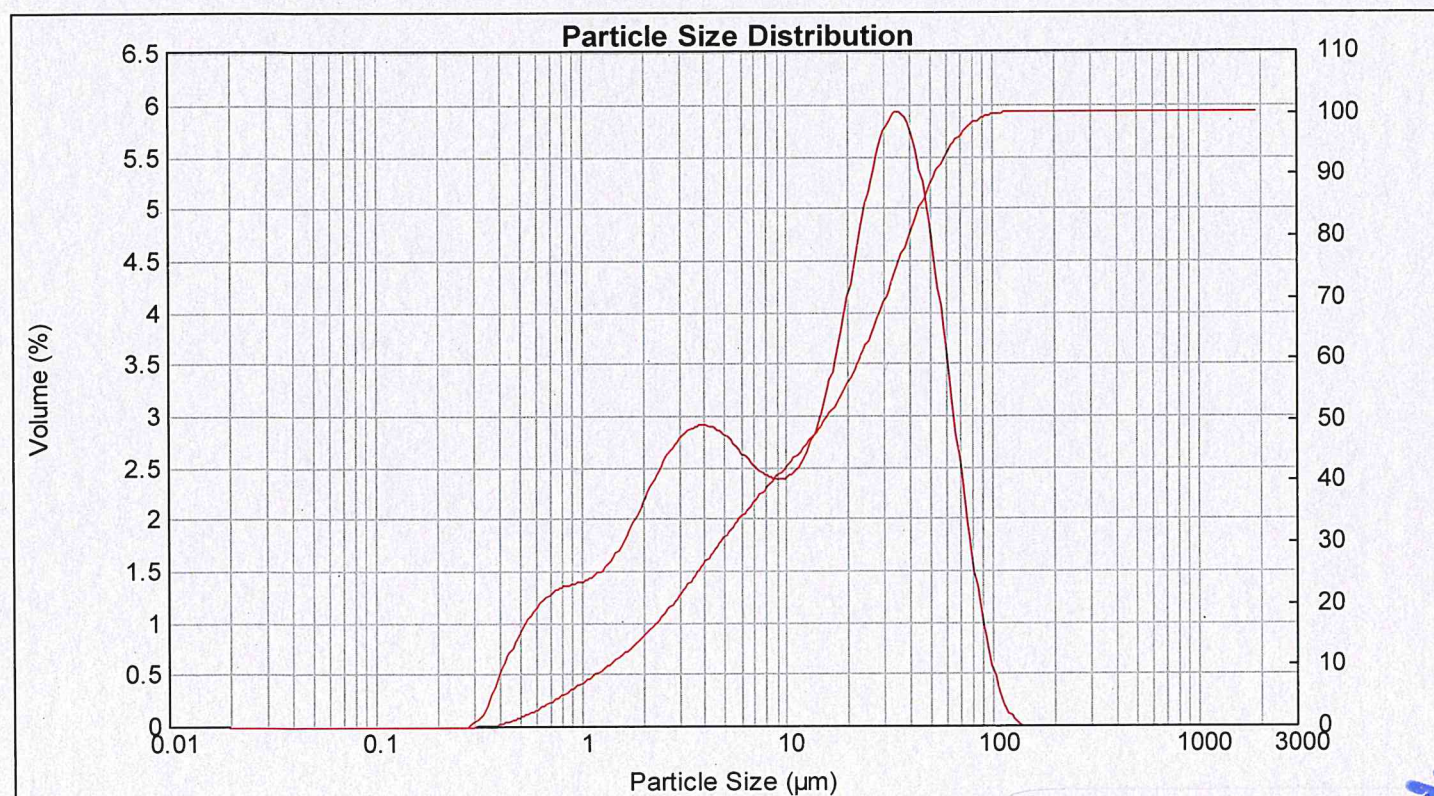
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.84 Residual (%) : 0.798
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0139 %Vol Specific Surface Area : 1.51 m²/g
Mean Diameters : D (0.1) : 1.39 um D (0.5) : 15.79 um D (0.9) : 53.86 um
D [4,3] : 22.41 um D [3,2] : 3.96 um Span : 3.324 Uniformity : 1.1

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.46	7.962	2.41	58.573	3.33	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.57	9.283	2.40	68.291	2.25	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.75	10.823	2.52	79.621	1.31	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.99	12.619	2.78	92.832	0.64	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.27	14.713	3.21	108.234	0.18	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.53	17.154	3.78	126.191	0.02	928.318	0.00
0.050	0.00	0.370	0.47	2.719	2.74	20.000	4.46	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.74	3.170	2.88	23.318	5.13	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.92	27.187	5.68	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.18	4.309	2.88	31.698	5.94	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.30	5.024	2.77	36.957	5.82	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.63	43.089	5.28	316.979	0.00		
0.126	0.00	0.928	1.40	6.829	2.50	50.238	4.40	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 23

Sample Details

Sample ID : WPWB-3C3_2

Measured : 21 มิถุนายน 2565 10:50:36

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 10:50:38

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

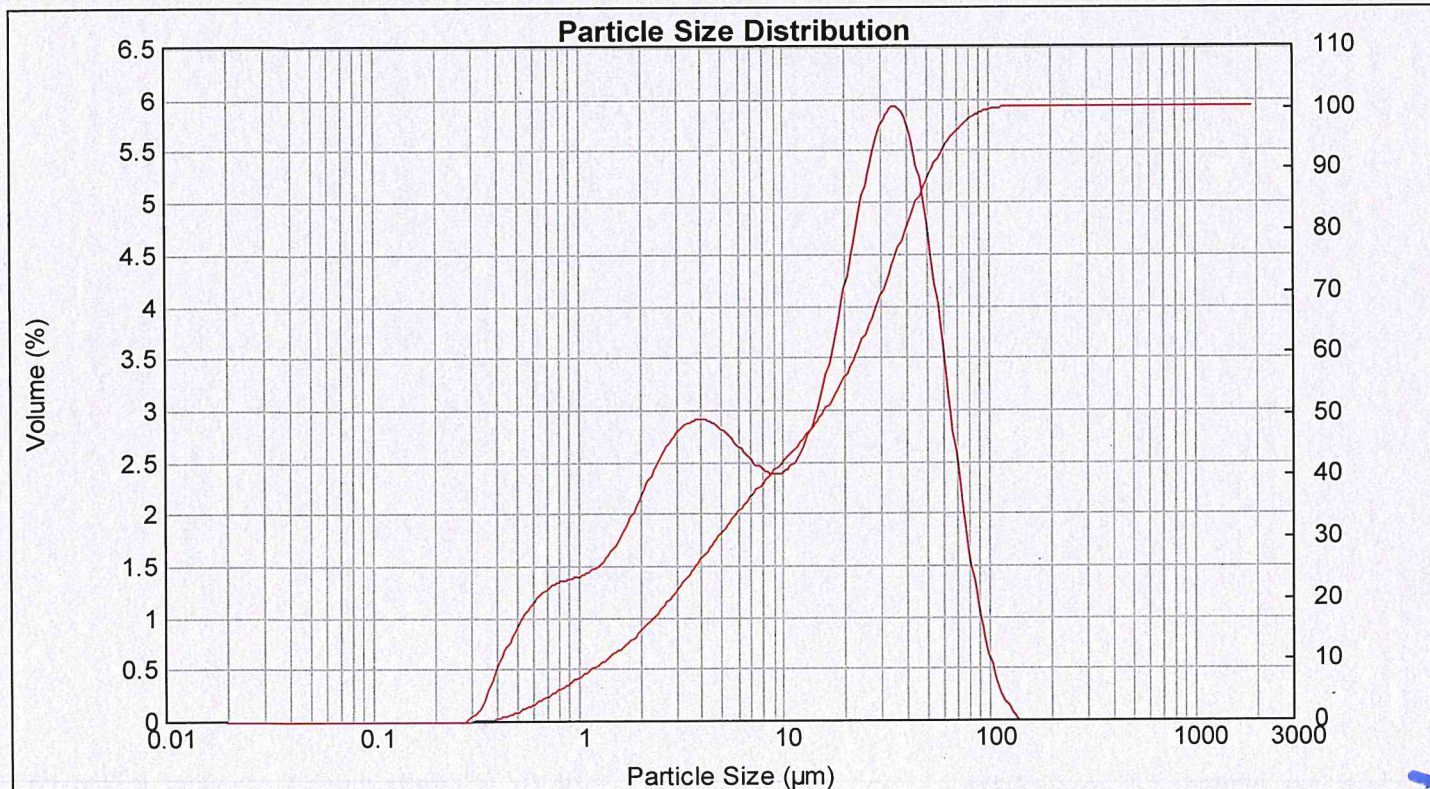
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.64 Residual (%) : 0.808
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0138 %Vol Specific Surface Area : 1.51 m²/g
Mean Diameters : D (0.1) : 1.39 um D (0.5) : 15.84 um D (0.9) : 54.07 um
D [4,3] : 22.52 um D [3,2] : 3.97 um Span : 3.326 Uniformity : 1.1

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.45	7.962	2.41	58.573	3.31	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.56	9.283	2.40	68.291	2.25	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.74	10.823	2.52	79.621	1.33	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.99	12.619	2.78	92.832	0.68	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.26	14.713	3.21	108.234	0.24	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.52	17.154	3.78	126.191	0.03	926.318	0.00
0.050	0.00	0.370	0.46	2.719	2.74	20.000	4.46	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.74	3.170	2.87	23.318	5.14	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.92	27.187	5.68	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.18	4.309	2.88	31.698	5.93	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.30	5.024	2.77	36.957	5.80	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.64	43.089	5.26	316.979	0.00		
0.126	0.00	0.928	1.40	6.829	2.50	50.238	4.38	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

Attached page 24

Sample Details

Sample ID : WPWB-3C3_3

Measured : 21 มิถุนายน 2565 10:51:24

Sample File : C:\Users\001827\Desktop\งานงาน\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetra_tech_lot2_91.mea

Analysed : 21 มิถุนายน 2565 10:51:25

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

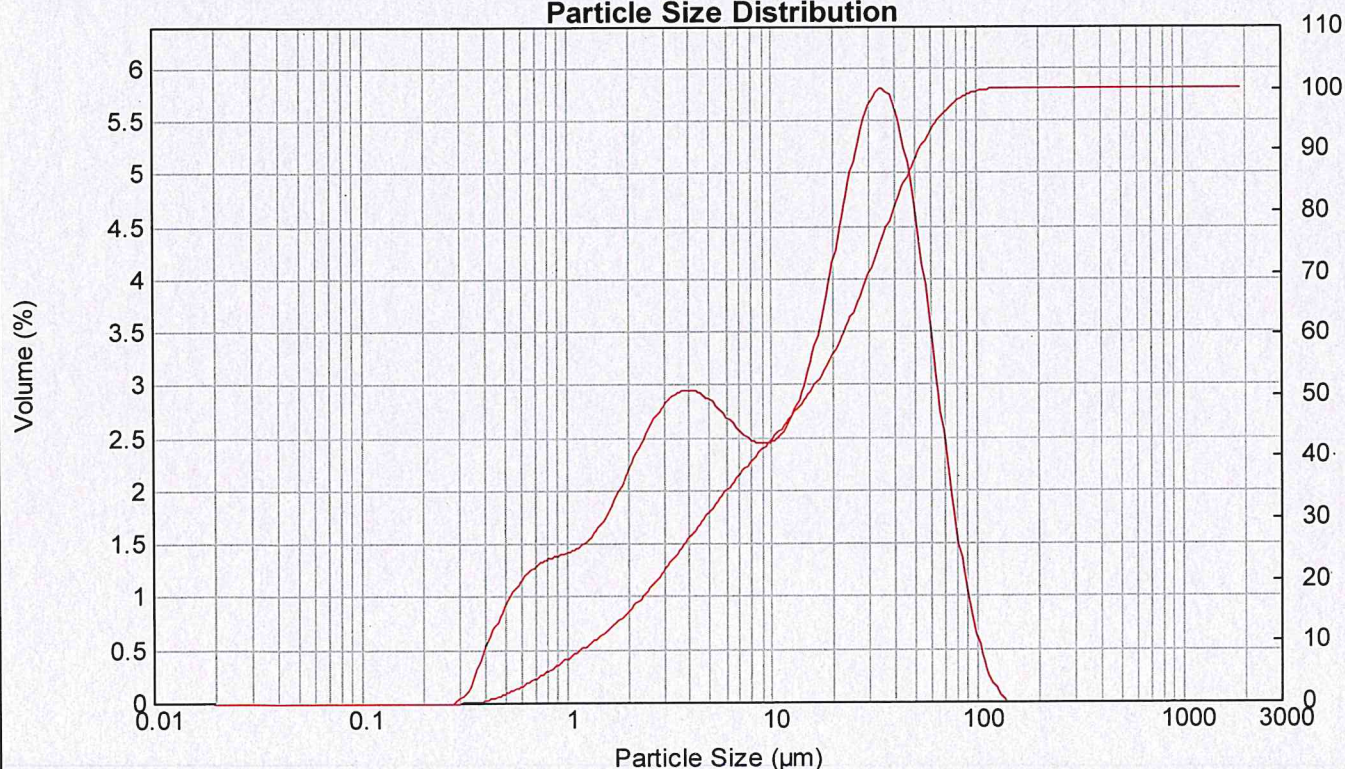
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.46 Residual (%) : 0.776
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0135 %Vol Specific Surface Area : 1.52 m²/g
Mean Diameters : D (0.1) : 1.38 um D (0.5) : 15.32 um D (0.9) : 53.85 um
D [4,3] : 22.27 um D [3,2] : 3.94 um Span : 3.425 Uniformity : 1.13

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.47	7.962	2.46	58.573	3.25	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.58	9.283	2.46	68.291	2.23	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.76	10.823	2.57	79.621	1.34	585.729	0.00
0.032	0.00	0.233	0.00	1.715	2.01	12.619	2.83	92.832	0.69	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.29	14.713	3.24	108.234	0.24	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.55	17.154	3.79	126.191	0.03	928.318	0.00
0.050	0.00	0.370	0.47	2.719	2.77	20.000	4.44	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.75	3.170	2.91	23.318	5.08	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.00	3.696	2.95	27.187	5.58	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.19	4.309	2.92	31.698	5.81	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.31	5.024	2.82	36.957	5.67	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.37	5.857	2.68	43.089	5.13	316.979	0.00		
0.126	0.00	0.928	1.41	6.829	2.55	50.238	4.28	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 25

Sample Details

Sample ID : WPWB-3D1_1

Measured : 21 มิถุนายน 2565 11:03:54

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:03:56

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

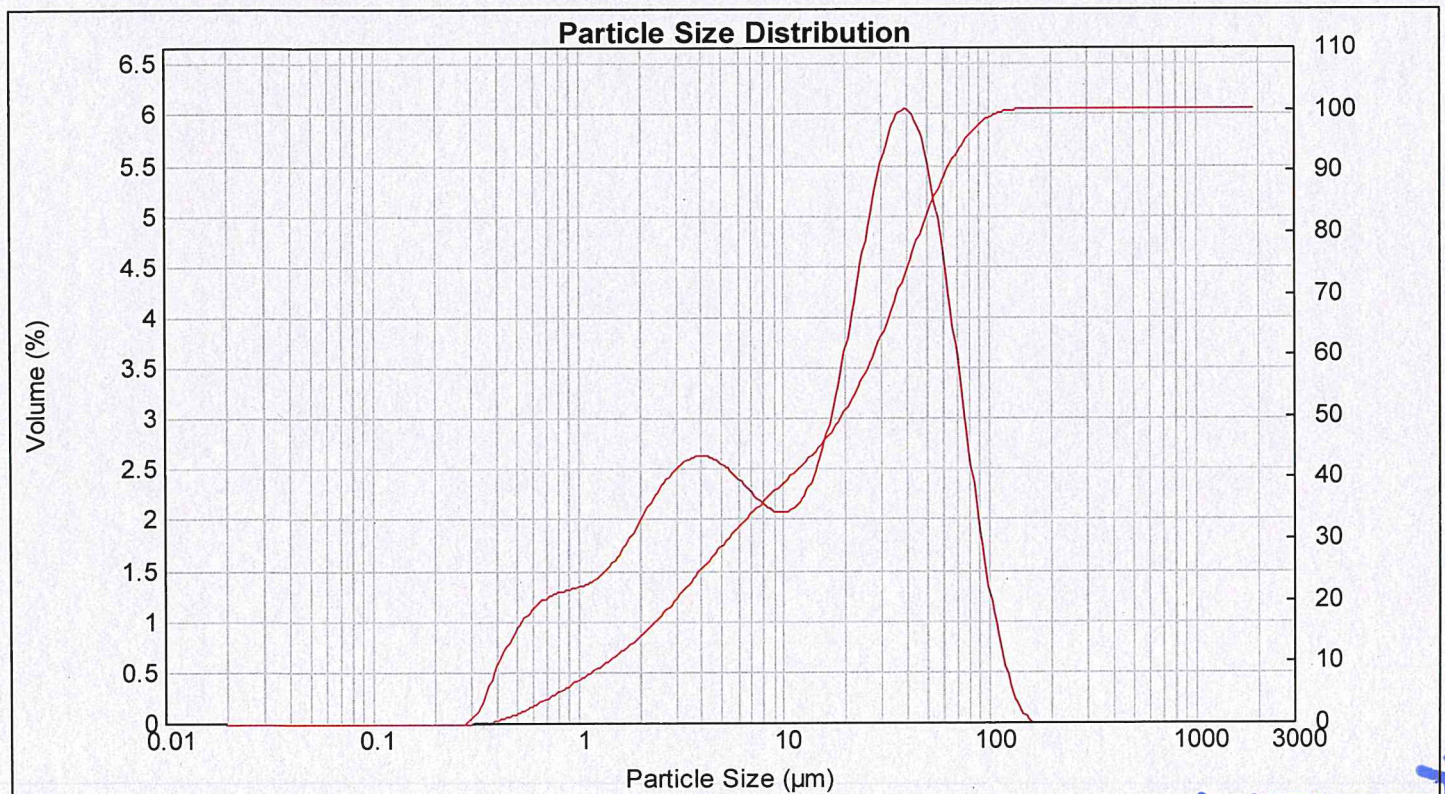
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.36 Residual (%) : 0.387
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0152 %Vol Specific Surface Area : 1.46 m²/g
Mean Diameters : D (0.1) : 1.42 um D (0.5) : 19.71 um D (0.9) : 63.56 um
D [4,3] : 26.6 um D [3,2] : 4.12 um Span : 3.153 Uniformity : 1.04

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.39	7.962	2.13	58.573	4.38	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.48	9.283	2.08	68.291	3.35	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.64	10.823	2.13	79.621	2.33	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.84	12.619	2.13	92.832	1.42	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.07	14.713	2.34	108.234	0.73	796.214	0.00
0.043	0.00	0.317	0.17	2.332	2.29	17.154	2.72	126.191	0.22	928.318	0.00
0.050	0.00	0.370	0.52	2.719	2.47	20.000	3.28	147.128	0.02	1082.339	0.00
0.059	0.00	0.431	0.77	3.170	2.59	23.318	3.97	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.63	27.187	4.73	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.15	4.309	2.61	31.698	5.41	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.25	5.024	2.52	36.957	5.90	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.30	5.857	2.39	43.089	6.07	316.979	0.00		
0.126	0.00	0.928	1.34	6.829	2.24	50.238	5.85	369.570	0.00		
0.147	0.00	1.082		7.962		58.573	5.26	430.887	0.00		



Result : Analysis Report

Attached page 26

Sample Details

Sample ID : WPWB-3D1_2

Measured : 21 มิถุนายน 2565 11:04:57

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:04:59

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

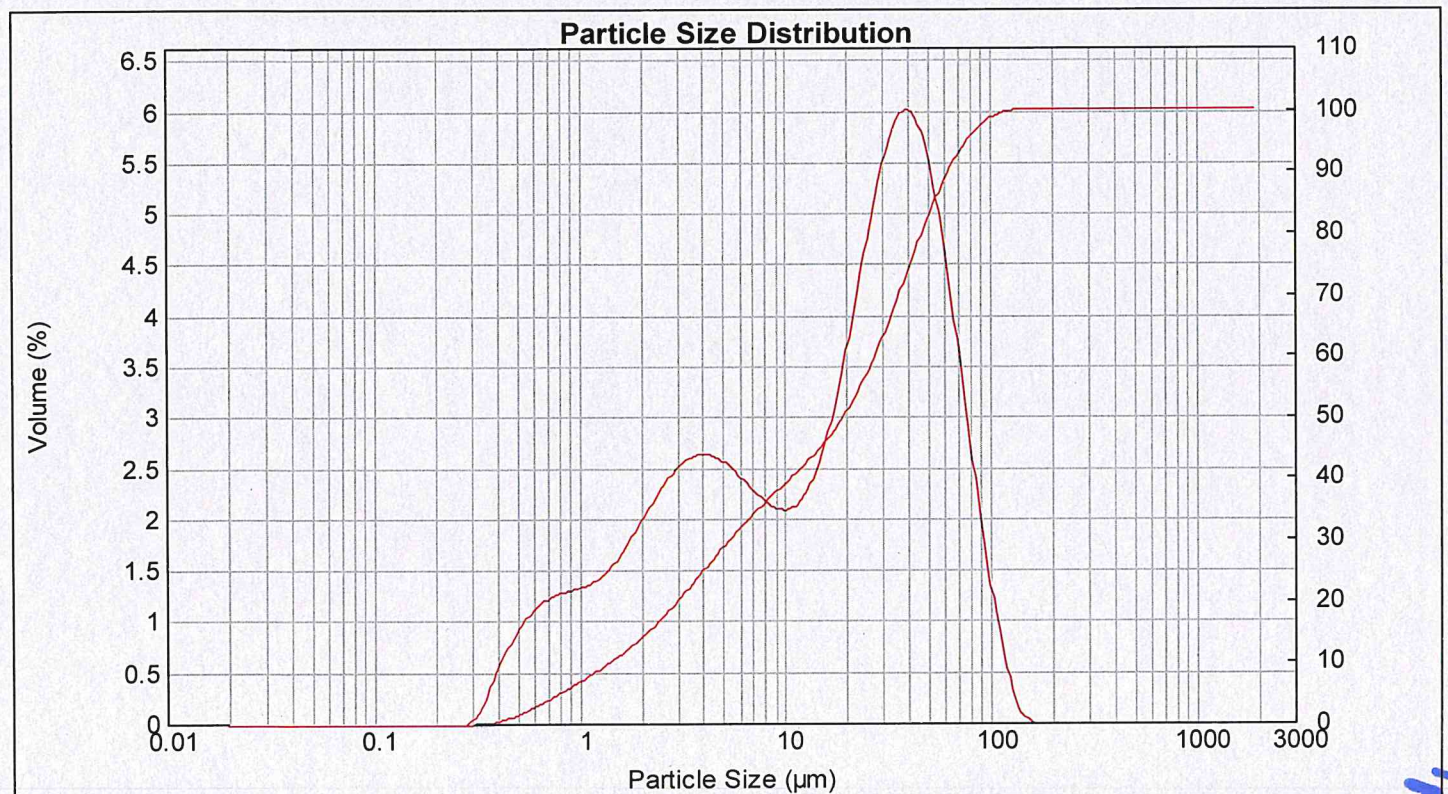
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.12 Residual (%) : 0.386
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0150 %Vol Specific Surface Area : 1.45 m²/g
Mean Diameters : D (0.1) : 1.43 um D (0.5) : 19.64 um D (0.9) : 63.71 um
D [4,3] : 26.59 um D [3,2] : 4.14 um Span : 3.170 Uniformity : 1.04

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.38	7.962	2.14	58.573	4.42	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.48	9.283	2.10	68.291	3.40	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.63	10.823	2.16	79.621	2.37	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.84	12.619	2.36	92.832	1.44	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.07	14.713	2.74	108.234	0.72	796.214	0.00
0.043	0.00	0.317	0.17	2.332	2.29	17.154	3.29	126.191	0.17	928.318	0.00
0.050	0.00	0.370	0.52	2.719	2.47	20.000	3.97	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.76	3.170	2.59	23.318	4.70	171.539	0.01	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.64	27.187	5.38	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.14	4.309	2.61	31.698	5.86	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.24	5.024	2.53	36.957	6.03	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.29	5.857	2.40	43.089	5.84	316.979	0.00		
0.126	0.00	0.928	1.33	6.829	2.26	50.238	5.27	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 27

Sample Details

Sample ID : WPWB-3D1_3

Measured : 21 มิถุนายน 2565 11:06:01

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetrattech_lot2_91.mea

Analysed : 21 มิถุนายน 2565 11:06:03

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

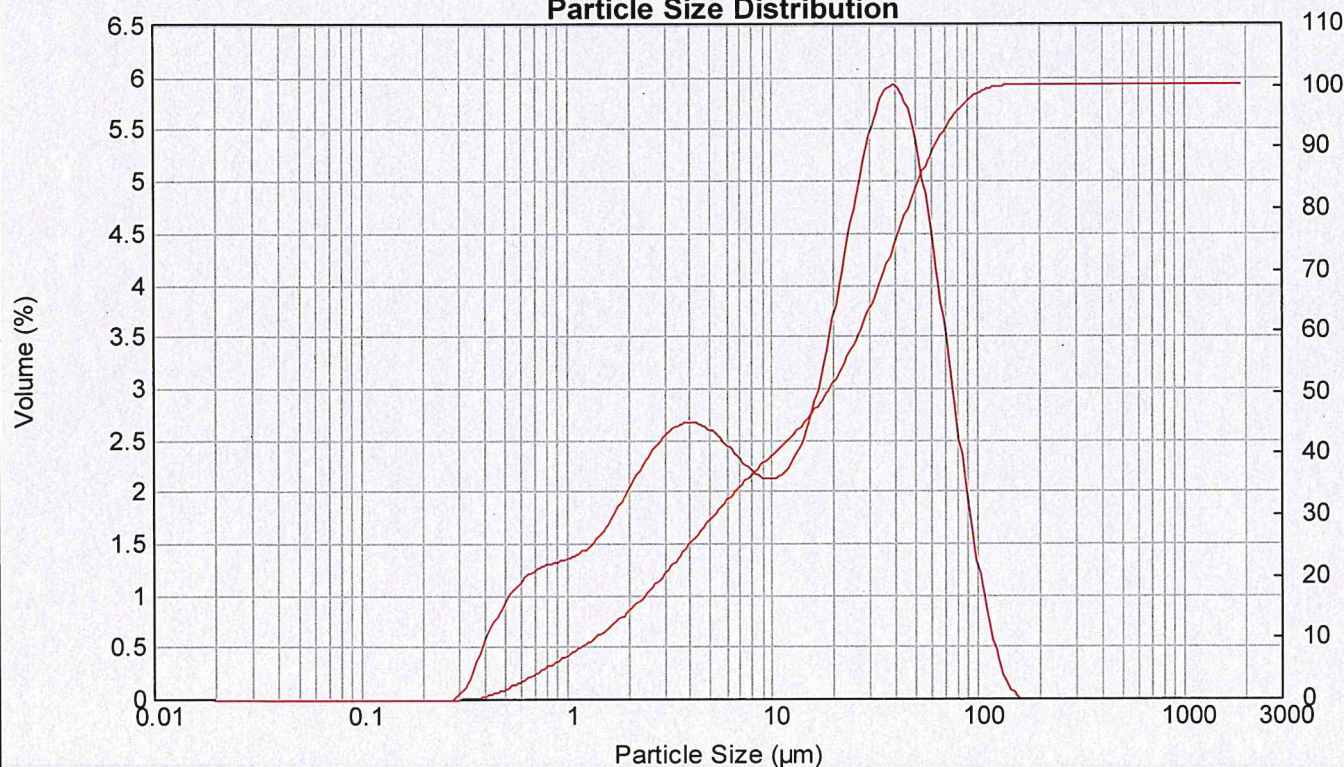
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.89 Residual (%) : 0.387
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0146 %Vol Specific Surface Area : 1.47 m²/g
Mean Diameters : D (0.1) : 1.41 um D (0.5) : 19.08 um D (0.9) : 63.35 um
D [4,3] : 26.31 um D [3,2] : 4.09 um Span : 3.246 Uniformity : 1.07

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.062	1.40	7.962	2.17	58.573	4.30	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.50	9.283	2.12	68.291	3.31	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.66	10.823	2.18	79.621	2.31	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.87	12.619	2.39	92.832	1.42	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.10	14.713	2.76	108.234	0.74	796.214	0.00
0.043	0.00	0.317	0.17	2.332	2.32	17.154	3.30	126.191	0.21	928.318	0.00
0.050	0.00	0.370	0.52	2.719	2.63	20.000	4.69	147.128	0.02	1082.339	0.00
0.059	0.00	0.431	0.77	3.170	2.50	23.318	5.34	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.00	3.696	2.68	27.187	5.79	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.16	4.309	2.65	31.698	5.94	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.26	5.024	2.43	36.957	5.15	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.31	5.857	2.29	43.089		316.979	0.00		
0.126	0.00	0.928	1.35	6.829		50.238		369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

Attached page 28

Sample Details

Sample ID : WPWB-3D2_1

Measured : 21 มิถุนายน 2565 11:14:19

Sample File : C:\Users\001827\Desktop\งานทาง\Technical service\Tetra
MTEC0884_65_163_175 of 102

Analysed : 21 มิถุนายน 2565 11:14:20

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

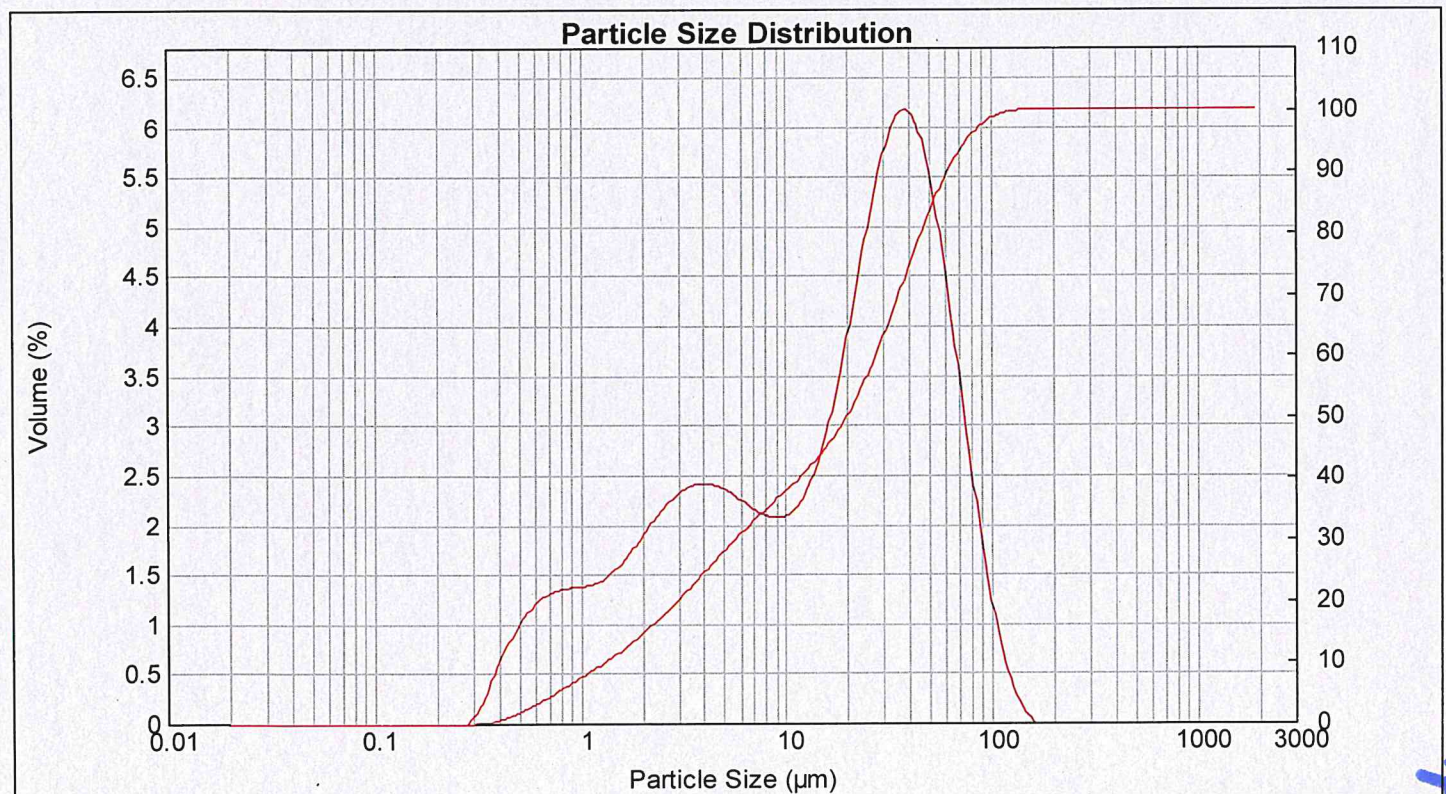
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.38 Residual (%) : 0.436
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0151 %Vol Specific Surface Area : 1.49 m²/g
Mean Diameters : D (0.1) : 1.34 um D (0.5) : 20.12 um D (0.9) : 62.56 um
D [4,3] : 26.5 um D [3,2] : 4.02 um Span : 3.043 Uniformity : 1

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.41	7.962	2.08	58.573	4.30	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.47	9.283	2.09	68.291	3.23	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.60	10.823	2.21	79.621	2.19	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.77	12.619	2.47	92.832	1.31	682.910	0.00
0.037	0.00	0.272	0.02	2.000	1.96	14.713	2.90	108.234	0.67	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.14	17.154	3.49	126.191	0.24	928.318	0.00
0.050	0.00	0.370	0.59	2.719	2.29	20.000	4.21	147.128	0.03	1082.339	0.00
0.059	0.00	0.431	0.85	3.170	2.39	23.318	4.96	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.08	3.696	2.42	27.187	5.63	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.23	4.309	2.40	31.698	6.07	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.32	5.024	2.33	36.957	6.18	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.24	43.089	5.90	316.979	0.00		
0.126	0.00	0.928	1.38	6.829	2.14	50.238	5.24	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 29

Sample Details

Sample ID : WPWB-3D2_2

Measured : 21 มิถุนายน 2565 11:15:38

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:15:39

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

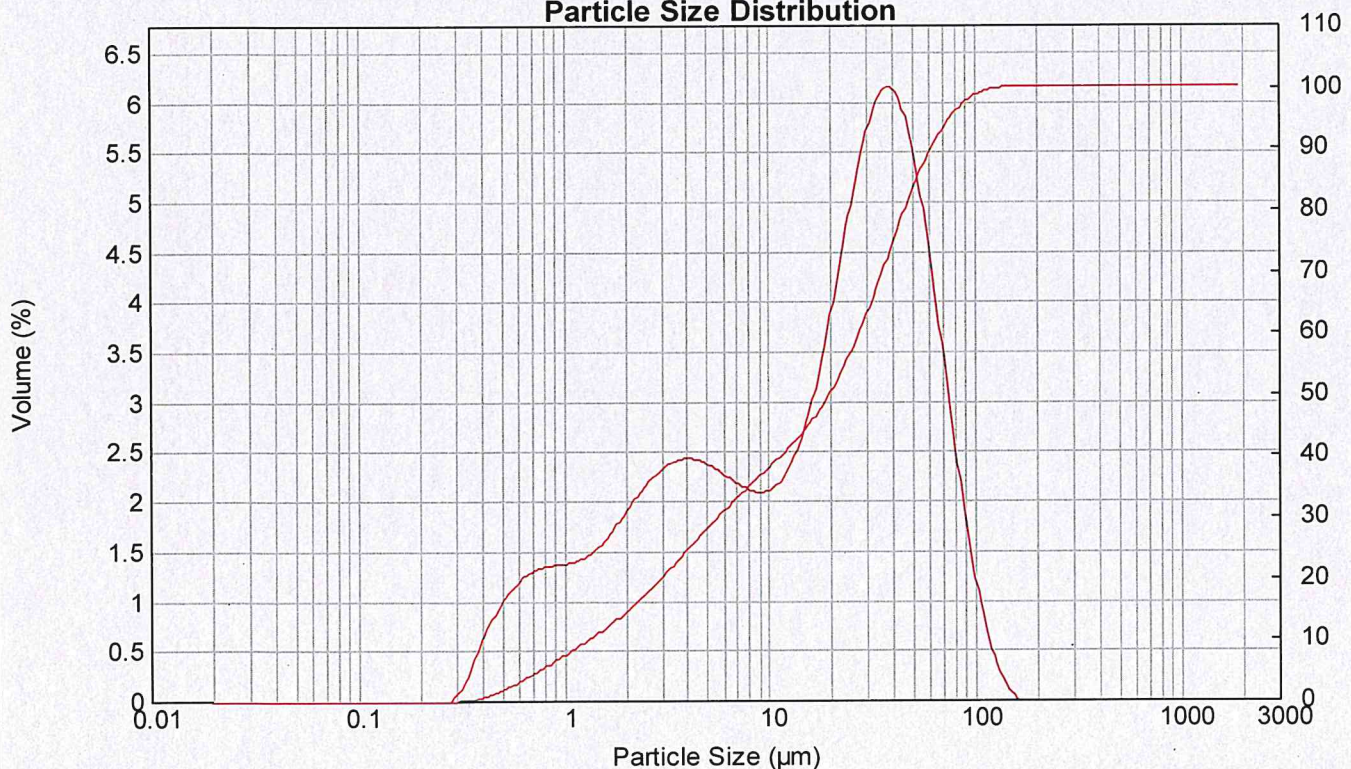
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.06 Residual (%) : 0.574
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0149 %Vol Specific Surface Area : 1.49 m²/g
Mean Diameters : D (0.1) : 1.35 um D (0.5) : 19.94 um D (0.9) : 62.42 um
D [4,3] : 26.41 um D [3,2] : 4.03 um Span : 3.063 Uniformity : 1.01

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.41	7.962	2.11	58.573	4.28	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.48	9.283	2.12	68.291	3.21	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.61	10.823	2.23	79.621	2.18	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.78	12.619	2.48	92.832	1.30	682.910	0.00
0.037	0.00	0.272	0.02	2.000	1.98	14.713	2.90	108.234	0.66	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.16	17.154	3.48	126.191	0.24	928.318	0.00
0.050	0.00	0.370	0.58	2.719	2.31	20.000	4.19	147.128	0.03	1082.339	0.00
0.059	0.00	0.431	0.84	3.170	2.40	23.318	4.94	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.07	3.696	2.44	27.187	5.60	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.22	4.309	2.42	31.698	6.05	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.31	5.024	2.36	36.957	6.16	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.26	43.089	5.88	316.979	0.00		
0.126	0.00	0.928	1.38	6.829	2.17	50.238	5.22	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 30

Sample Details

Sample ID : WPWB-3D2_3

Measured : 21 มิถุนายน 2565 11:16:58

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 102

Analysed : 21 มิถุนายน 2565 11:16:59

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

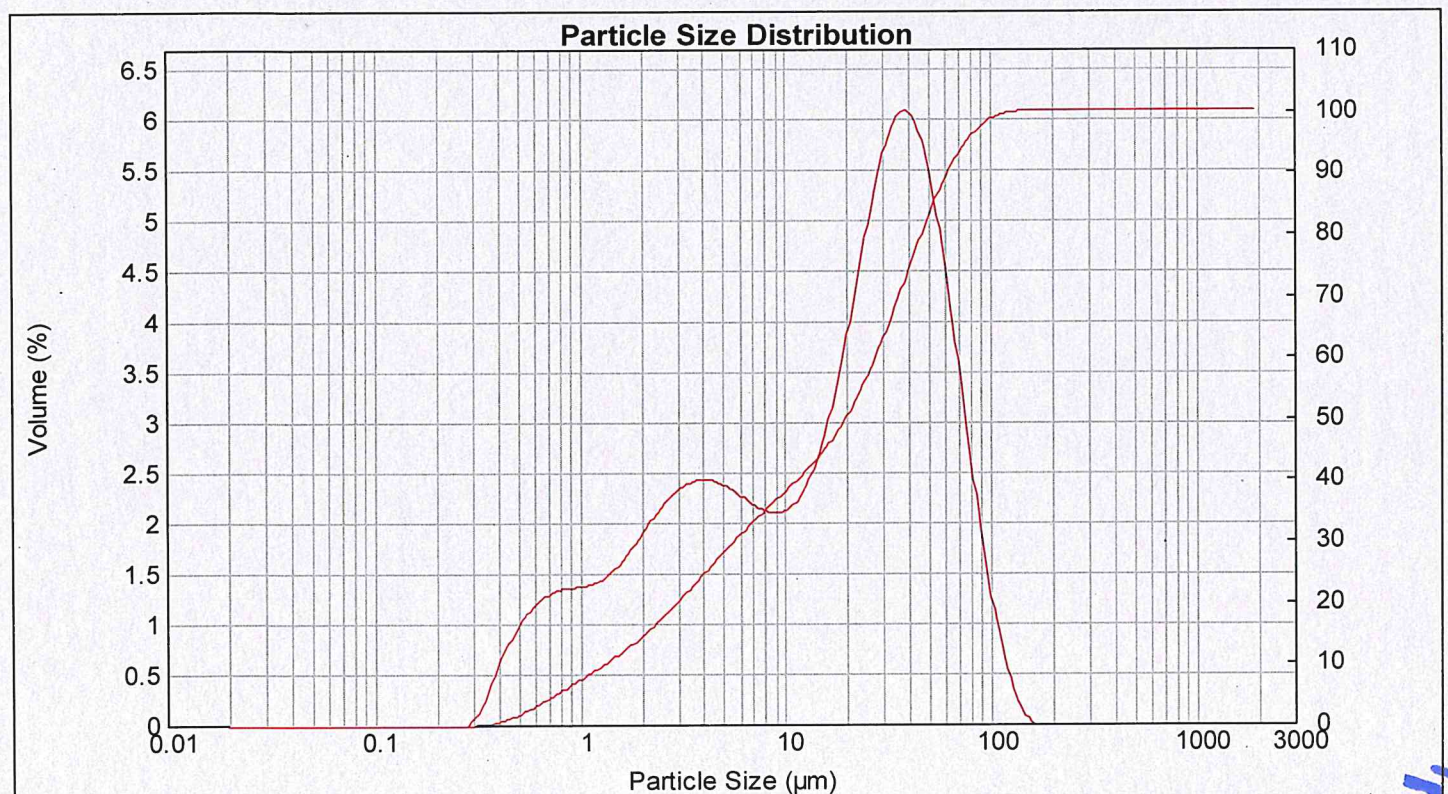
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.87 Residual (%) : 0.405
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0147 %Vol Specific Surface Area : 1.49 m²/g
Mean Diameters : D (0.1) : 1.35 um D (0.5) : 19.89 um D (0.9) : 62.81 um
D [4,3] : 26.48 um D [3,2] : 4.04 um Span : 3.090 Uniformity : 1.02

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.40	7.962	2.12	58.573	4.29	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.48	9.283	2.13	68.291	3.26	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.60	10.823	2.24	79.621	2.24	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.78	12.619	2.50	92.832	1.35	682.910	0.00
0.037	0.00	0.272	0.02	2.000	1.98	14.713	2.92	108.234	0.69	796.214	0.00
0.043	0.00	0.317	0.21	2.332	2.16	17.154	3.50	126.191	0.22	928.318	0.00
0.050	0.00	0.370	0.58	2.719	2.31	20.000	4.19	147.128	0.00	1082.339	0.00
0.059	0.00	0.431	0.83	3.170	2.41	23.318	4.92	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.06	3.696	2.44	27.187	5.56	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.22	4.309	2.42	31.698	5.99	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.31	5.024	2.36	36.957	6.10	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.36	5.857	2.26	43.089	5.83	316.979	0.00		
0.126	0.00	0.928	1.38	6.829	2.17	50.238	5.20	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 31

Sample Details

Sample ID : WPWB-3D3_1

Measured : 21 มิถุนายน 2565 11:28:54

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163_175 of 102

Analysed : 21 มิถุนายน 2565 11:28:56

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

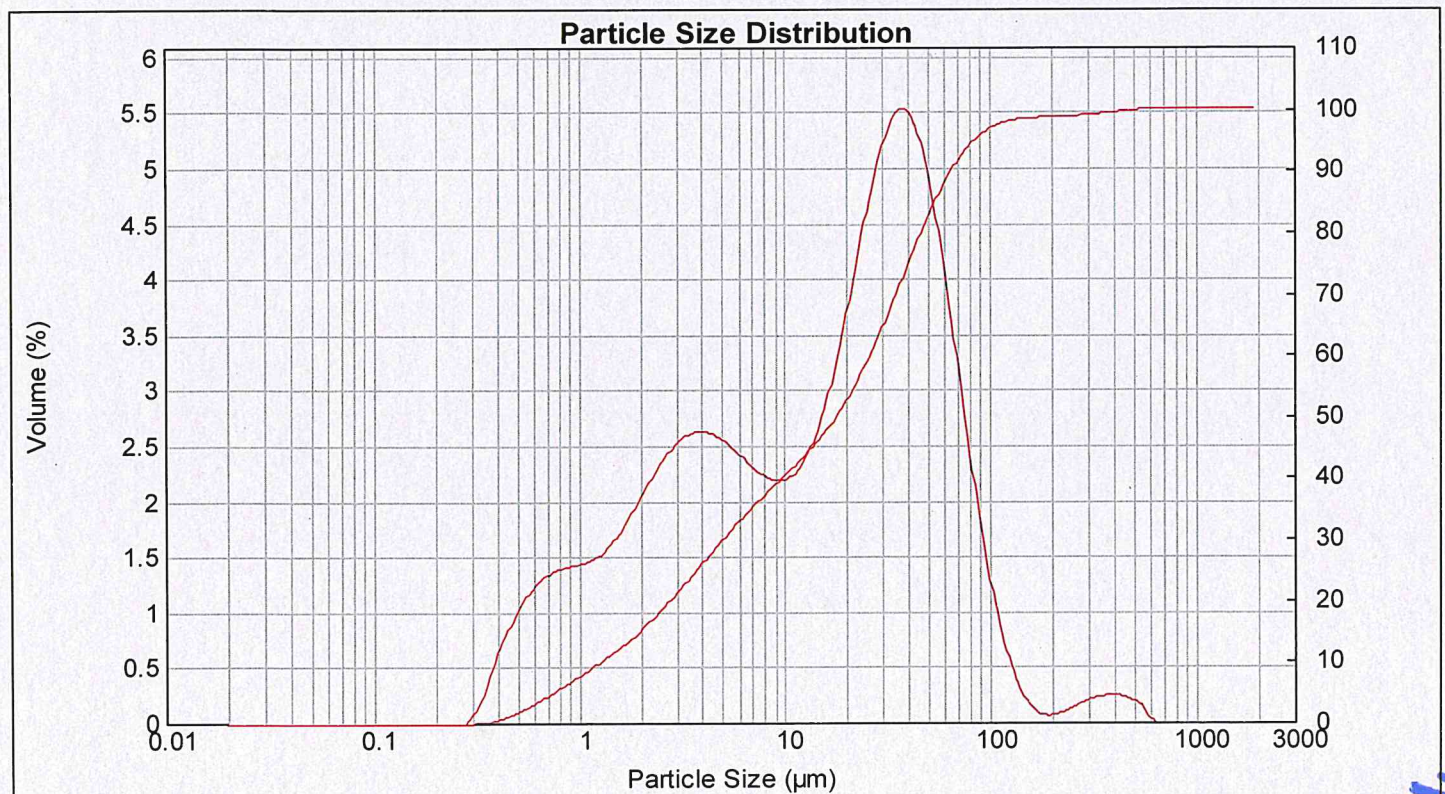
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.98 Residual (%) : 0.416
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0142 %Vol Specific Surface Area : 1.55 m²/g
Mean Diameters : D (0.1) : 1.3 um D (0.5) : 18.02 um D (0.9) : 65.85 um
D [4,3] : 30.4 um D [3,2] : 3.88 um Span : 3.582 Uniformity : 1.38

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.47	7.962	2.21	58.573	3.89	430.887	0.23
0.023	0.00	0.172	0.00	1.262	1.56	9.283	2.20	68.291	2.99	502.377	0.17
0.027	0.00	0.200	0.00	1.471	1.71	10.823	2.29	79.621	2.12	585.729	0.01
0.032	0.00	0.233	0.00	1.715	1.90	12.619	2.50	92.832	1.36	682.910	0.00
0.037	0.00	0.272	0.02	2.000	2.12	14.713	2.86	108.234	0.77	796.214	0.00
0.043	0.00	0.317	0.22	2.332	2.33	17.154	3.36	126.191	0.38	928.318	0.00
0.050	0.00	0.370	0.60	2.719	2.50	20.000	3.96	147.128	0.07	1082.339	0.00
0.059	0.00	0.431	0.86	3.170	2.60	23.318	4.58	171.539	0.15	1261.915	0.00
0.068	0.00	0.502	1.10	3.696	2.64	27.187	5.12	200.000	0.08	1471.285	0.00
0.080	0.00	0.586	1.26	4.309	2.61	31.698	5.47	233.183	0.14	1715.392	0.00
0.093	0.00	0.683	1.36	5.024	2.52	36.957	5.53	271.871	0.19	2000.000	0.00
0.108	0.00	0.796	1.41	5.857	2.41	43.089	5.26	316.979	0.24		
0.126	0.00	0.928	1.43	6.829	2.29	50.238	4.69	369.570	0.25		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 32

Sample Details

Sample ID : WPWB-3D3_2

Measured : 21 มิถุนายน 2565 11:30:29

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:30:30

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

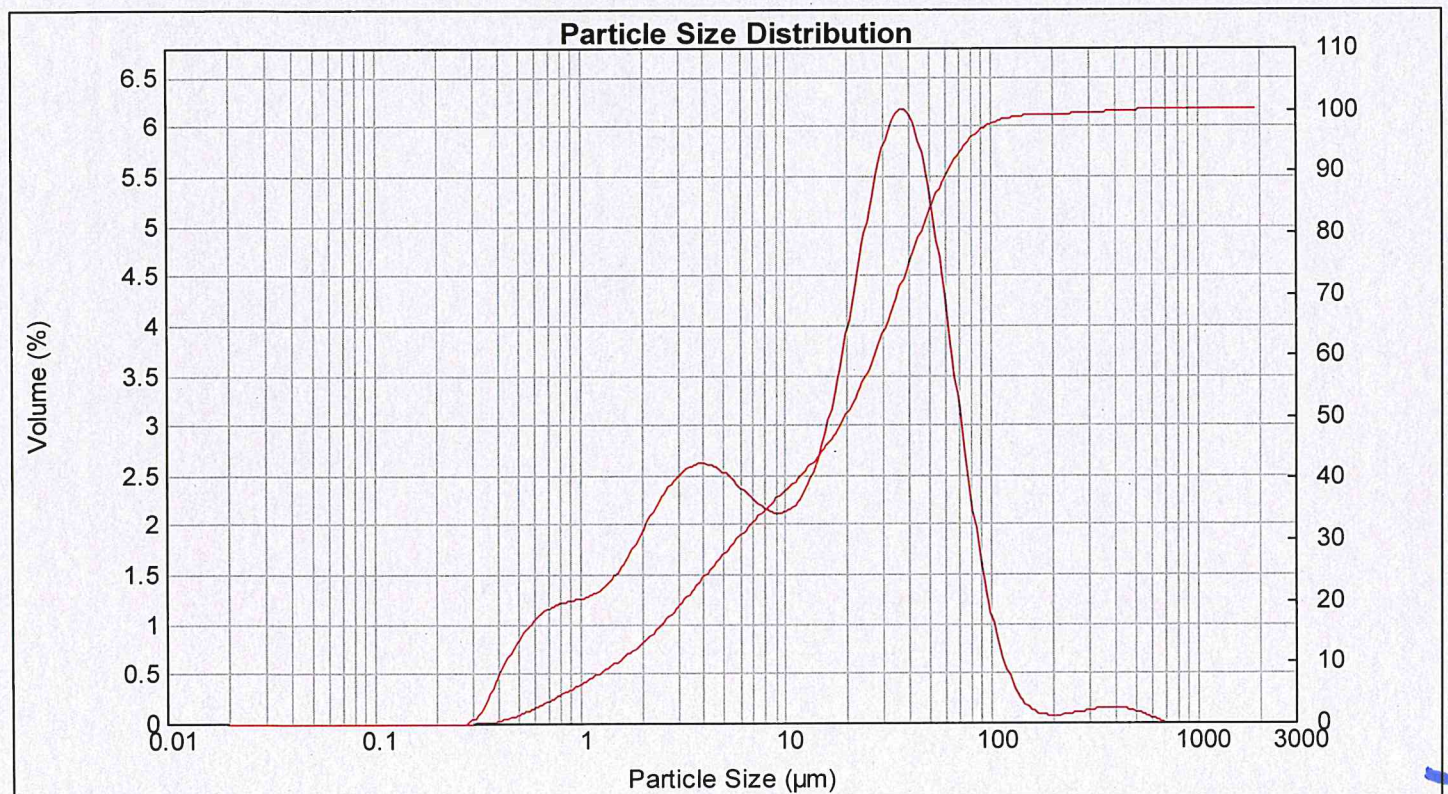
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.62 Residual (%) : 0.88
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0152 %Vol Specific Surface Area : 1.38 m²/g
Mean Diameters : D (0.1) : 1.53 um D (0.5) : 20.02 um D (0.9) : 63.07 um
D [4,3] : 29.29 um D [3,2] : 4.35 um Span : 3.073 Uniformity : 1.14

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.30	7.962	2.14	58.573	4.00	430.887	0.14
0.023	0.00	0.172	0.00	1.262	1.39	9.283	2.13	68.291	2.93	502.377	0.10
0.027	0.00	0.200	0.00	1.471	1.56	10.823	2.24	79.621	1.95	585.729	0.04
0.032	0.00	0.233	0.00	1.715	1.78	12.619	2.49	92.832	1.17	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.03	14.713	2.91	108.234	0.63	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.26	17.154	3.51	126.191	0.30	928.318	0.00
0.050	0.00	0.370	0.43	2.719	2.46	20.000	5.01	147.128	0.08	1082.339	0.00
0.059	0.00	0.431	0.68	3.170	2.58	23.318	4.24	171.539	0.14	1261.915	0.00
0.068	0.00	0.502	0.91	3.696	2.62	27.187	5.68	200.000	0.07	1471.285	0.00
0.080	0.00	0.586	1.07	4.309	2.59	31.698	6.11	233.183	0.09	1715.392	0.00
0.093	0.00	0.683	1.18	5.024	2.49	36.957	6.15	271.871	0.12	2000.000	0.00
0.108	0.00	0.796	1.23	5.857	2.36	43.089	5.77	316.979	0.14		
0.126	0.00	0.928	1.26	6.829	2.23	50.238	5.01	369.570	0.15		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 33

Sample Details

Sample ID : WPWB-3D3_3

Measured : 21 มิถุนายน 2565 11:32:04

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetrattech_lot2_91.mea

Analysed : 21 มิถุนายน 2565 11:32:05

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

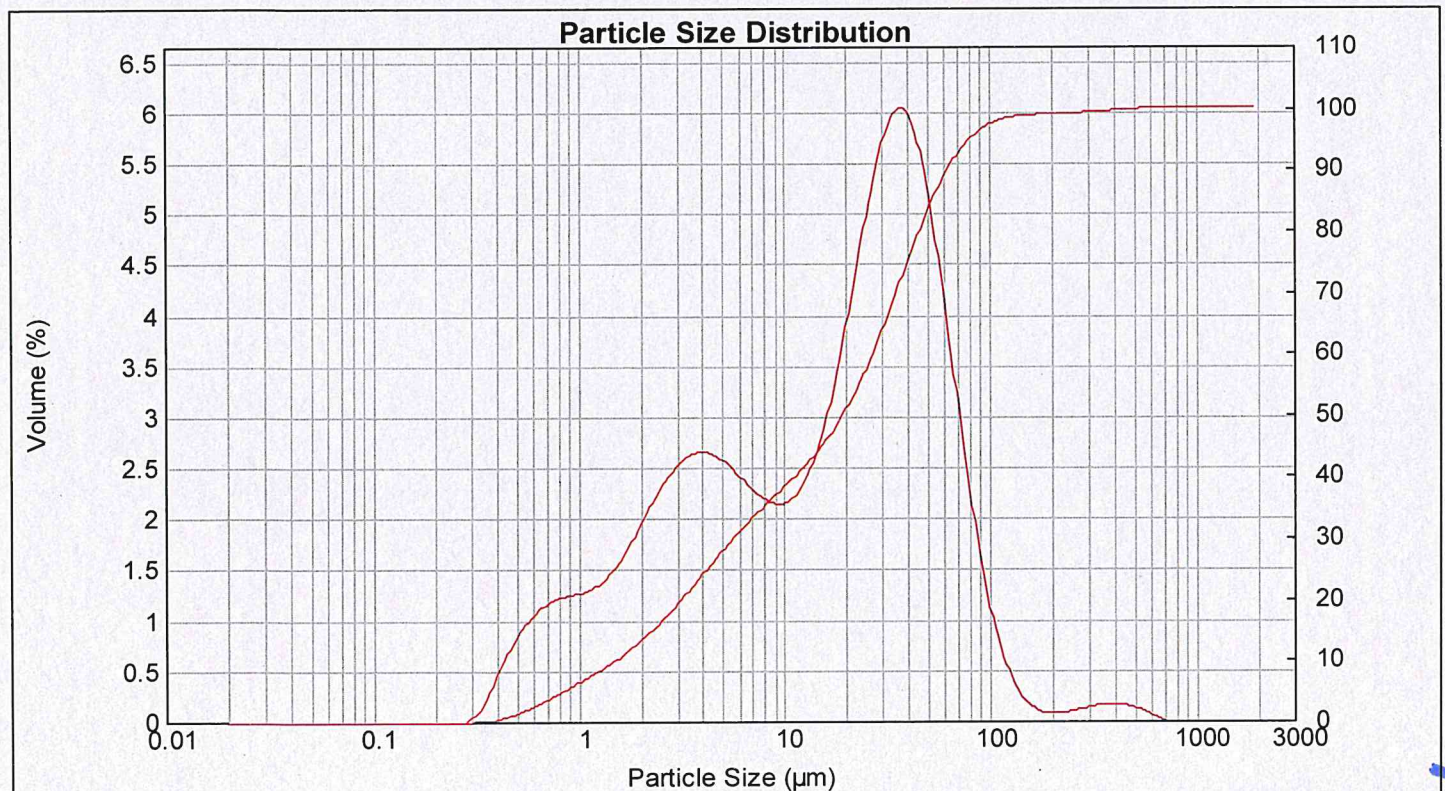
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.33 Residual (%) : 0.862
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0148 %Vol Specific Surface Area : 1.39 m²/g
Mean Diameters : D (0.1) : 1.52 um D (0.5) : 19.54 um D (0.9) : 63.4 um
D [4,3] : 29.56 um D [3,2] : 4.31 um Span : 3.167 Uniformity : 1.19

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.31	7.962	2.18	58.573	3.92	430.887	0.16
0.023	0.00	0.172	0.00	1.262	1.41	9.283	2.16	68.291	2.89	502.377	0.11
0.027	0.00	0.200	0.00	1.471	1.58	10.823	2.26	79.621	1.95	585.729	0.05
0.032	0.00	0.233	0.00	1.715	1.80	12.619	2.51	92.832	1.19	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.06	14.713	2.92	108.234	0.66	796.214	0.00
0.043	0.00	0.317	0.13	2.332	2.30	17.154	3.50	126.191	0.33	928.318	0.00
0.050	0.00	0.370	0.44	2.719	2.50	20.000	4.21	147.128	0.09	1082.339	0.00
0.059	0.00	0.431	0.69	3.170	2.62	23.318	4.95	171.539	0.08	1261.915	0.00
0.068	0.00	0.502	0.92	3.696	2.67	27.187	5.59	200.000	0.08	1471.285	0.00
0.080	0.00	0.586	1.08	4.309	2.63	31.698	5.99	233.183	0.10	1715.392	0.00
0.093	0.00	0.683	1.19	5.024	2.54	36.957	6.02	271.871	0.13	2000.000	0.00
0.108	0.00	0.796	1.24	5.857	2.40	43.089	5.64	316.979	0.16		
0.126	0.00	0.928	1.27	6.829	2.27	50.238	4.89	369.570	0.17		
0.147	0.00	1.082		7.962		58.573		430.887			



Result : Analysis Report

Attached page 34

Sample Details

Sample ID : WPWB-4B1X_1

Measured : 21 มิถุนายน 2565 11:47:21

Sample File : C:\Users\001827\Desktop\งานเทคนิค\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetrat2_91.mea

Analysed : 21 มิถุนายน 2565 11:47:23

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

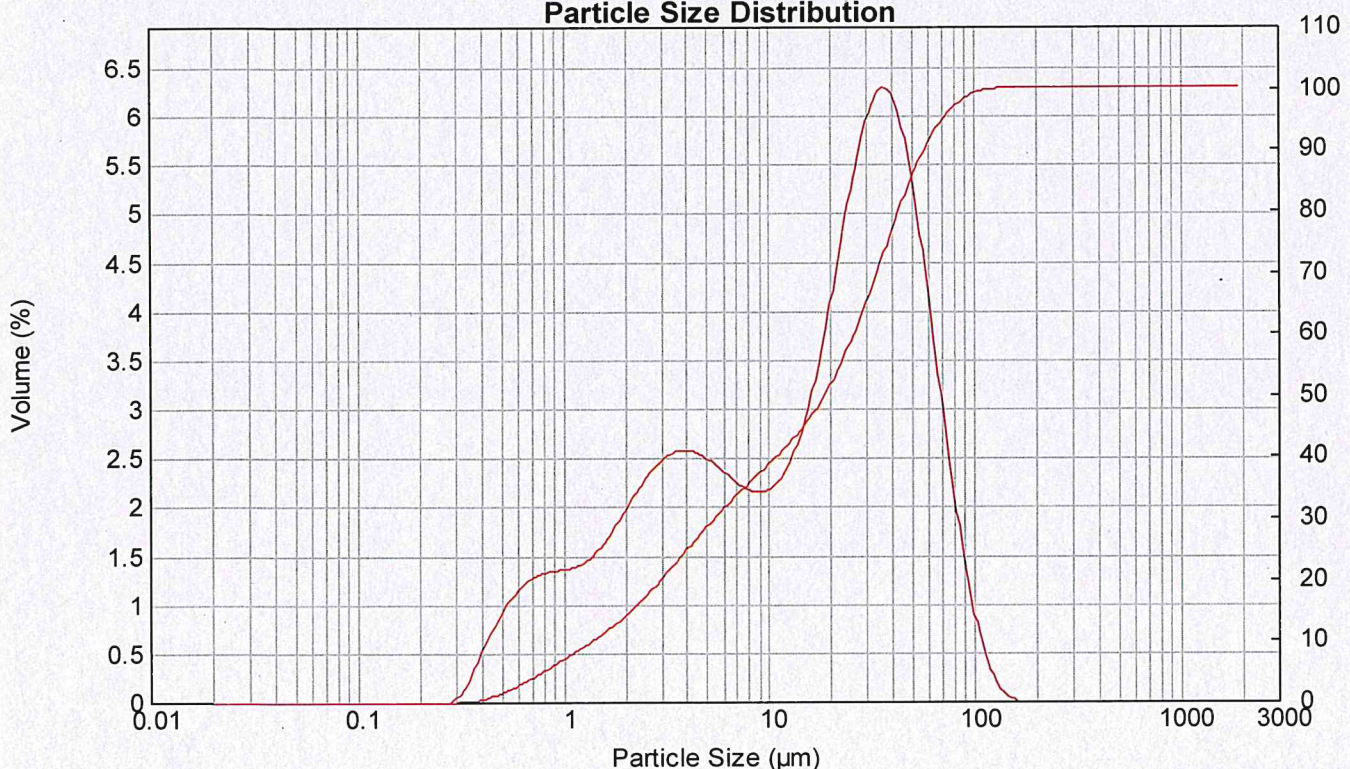
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.39 Residual (%) : 0.914
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0152 %Vol Specific Surface Area : 1.46 m²/g
Mean Diameters : D (0.1) : 1.41 um D (0.5) : 18.98 um D (0.9) : 58.48 um
D [4,3] : 24.95 um D [3,2] : 4.12 um Span : 3.007 Uniformity : 0.997

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.39	7.962	2.16	58.573	3.89	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.47	9.283	2.18	68.291	2.77	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.62	10.823	2.31	79.621	1.76	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.83	12.619	2.59	92.832	0.96	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.06	14.713	3.04	108.234	0.44	796.214	0.00
0.043	0.00	0.317	0.16	2.332	2.28	17.154	3.66	126.191	0.12	928.318	0.00
0.050	0.00	0.370	0.48	2.719	2.45	20.000	4.41	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.75	3.170	2.56	23.318	5.19	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	1.00	3.696	2.59	27.187	5.86	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.18	4.309	2.55	31.698	6.25	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.28	5.024	2.46	36.957	6.25	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.34	5.857	2.34	43.089	5.80	316.979	0.00		
0.126	0.00	0.928	1.36	6.829	2.23	50.238	4.96	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 35

Sample Details

Sample ID : WPWB-4B1X_2

Measured : 21 มิถุนายน 2565 11:48:26

Sample File : C:\Users\001827\Desktop\งานรท\Technical service\Tetra
MAL1655MTEC0884_65_163_02_182\MTEC0884_65_163_175 of 102

Analysed : 21 มิถุนายน 2565 11:48:27

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

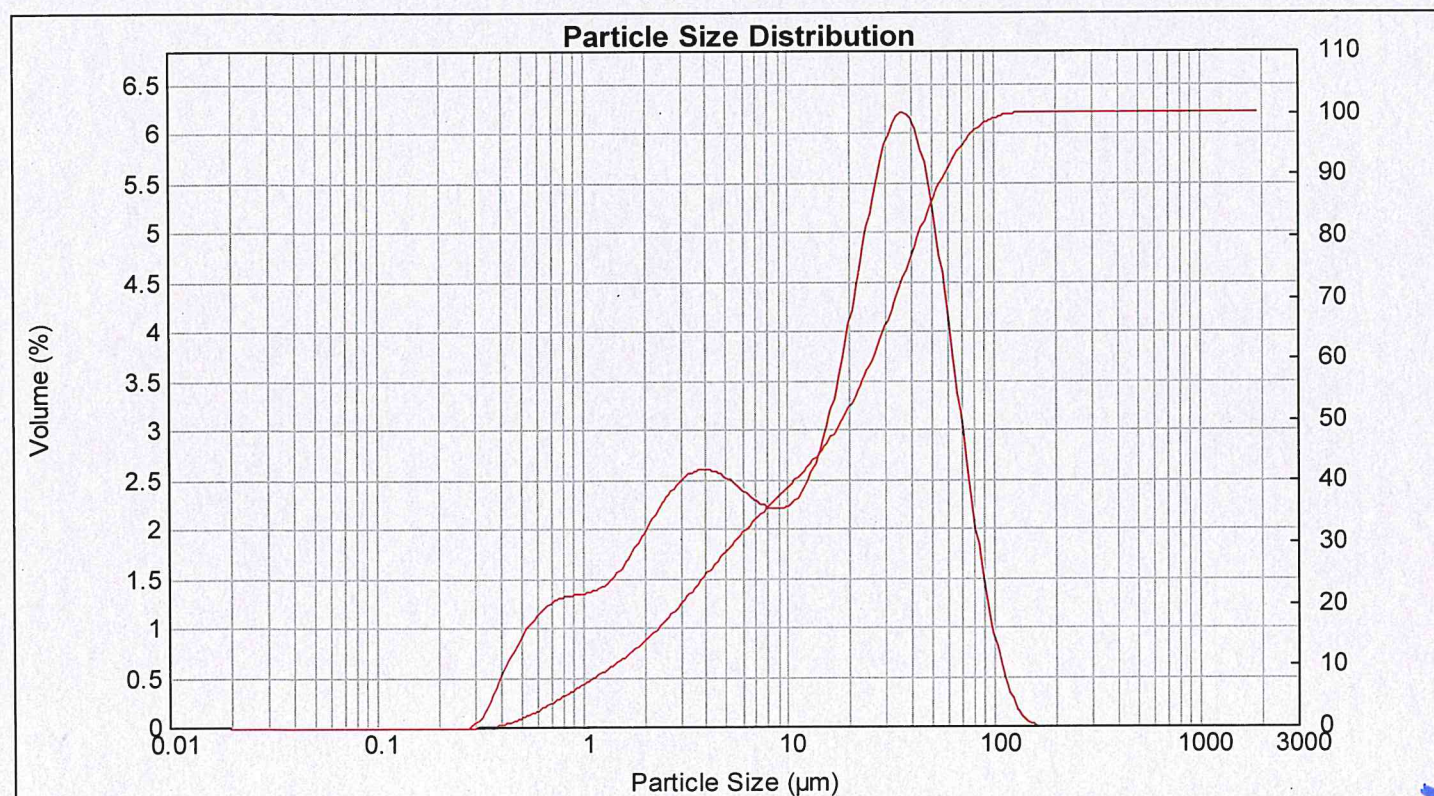
System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.98 Residual (%) : 0.908
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0149 %Vol Specific Surface Area : 1.45 m²/g
Mean Diameters : D (0.1) : 1.42 um D (0.5) : 18.78 um D (0.9) : 58.7 um
D [4,3] : 24.94 um D [3,2] : 4.14 um Span : 3.049 Uniformity : 1.01

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.38	7.962	2.21	58.573	3.89	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.47	9.283	2.22	68.291	2.79	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.61	10.823	2.35	79.621	1.79	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.82	12.619	2.63	92.832	1.00	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.05	14.713	3.07	108.234	0.46	796.214	0.00
0.043	0.00	0.317	0.15	2.332	2.27	17.154	3.68	126.191	0.12	928.318	0.00
0.050	0.00	0.370	0.48	2.719	2.45	20.000	4.40	147.128	0.01	1082.339	0.00
0.059	0.00	0.431	0.74	3.170	2.56	23.318	5.16	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.60	27.187	5.80	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.17	4.309	2.57	31.698	6.17	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.27	5.024	2.49	36.957	6.16	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.33	5.857	2.38	43.089	5.73	316.979	0.00		
0.126	0.00	0.928	1.35	6.829	2.27	50.238	4.93	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		



Result : Analysis Report

Attached page 36

Sample Details

Sample ID : WPWB-4B1X_3

Measured : 21 มิถุนายน 2565 11:50:01

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:50:03

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

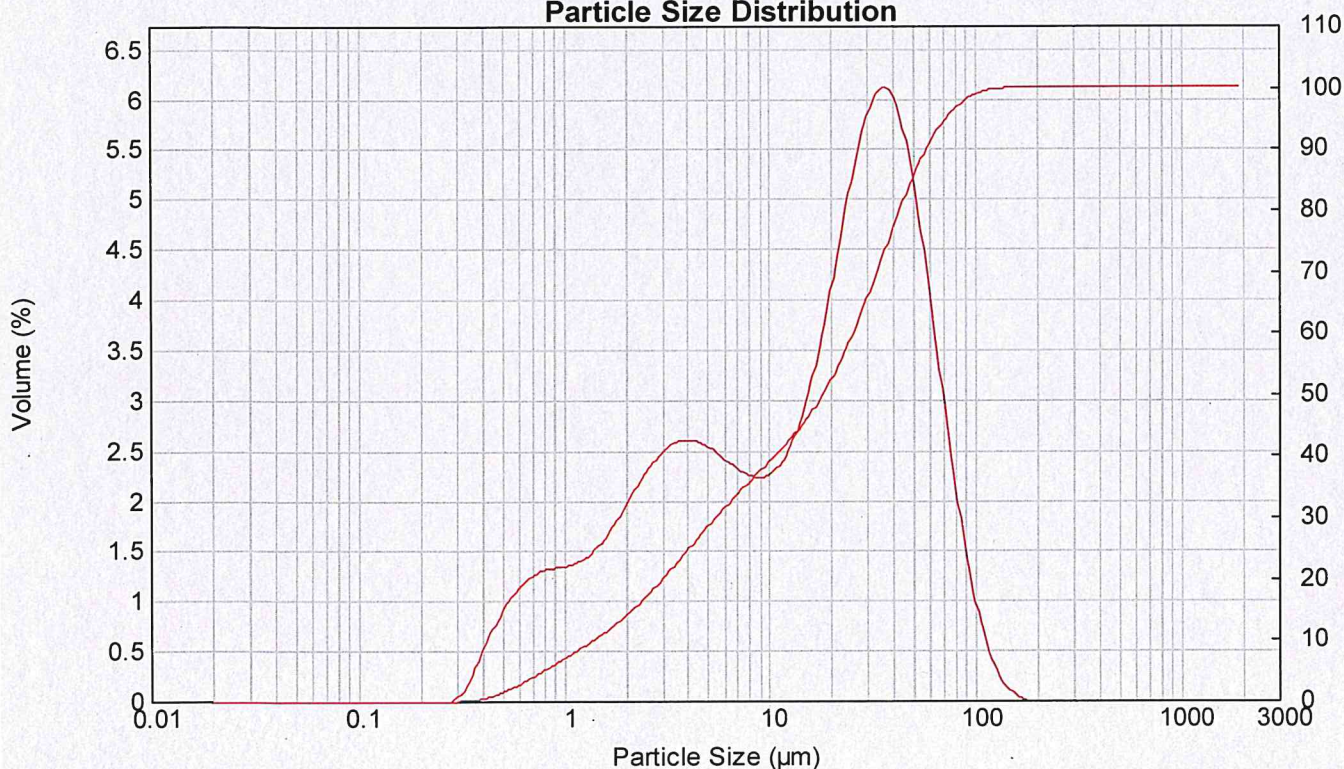
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.64 Residual (%) : 0.890
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0145 %Vol Specific Surface Area : 1.45 m²/g
Mean Diameters : D (0.1) : 1.42 um D (0.5) : 18.52 um D (0.9) : 58.94 um
D [4,3] : 24.99 um D [3,2] : 4.14 um Span : 3.106 Uniformity : 1.03

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.39	7.962	2.25	58.573	3.81	430.887	0.00
0.023	0.00	0.172	0.00	1.262	1.47	9.283	2.26	68.291	2.75	502.377	0.00
0.027	0.00	0.200	0.00	1.471	1.62	10.823	2.39	79.621	1.80	585.729	0.00
0.032	0.00	0.233	0.00	1.715	1.83	12.619	2.67	92.832	1.04	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.06	14.713	3.10	108.234	0.52	796.214	0.00
0.043	0.00	0.317	0.15	2.332	2.28	17.154	3.70	126.191	0.19	928.318	0.00
0.050	0.00	0.370	0.47	2.719	2.46	20.000	4.40	147.128	0.06	1082.339	0.00
0.059	0.00	0.431	0.74	3.170	2.57	23.318	5.13	171.539	0.00	1261.915	0.00
0.068	0.00	0.502	0.99	3.696	2.62	27.187	5.74	200.000	0.00	1471.285	0.00
0.080	0.00	0.586	1.16	4.309	2.59	31.698	6.09	233.183	0.00	1715.392	0.00
0.093	0.00	0.683	1.27	5.024	2.51	36.957	6.06	271.871	0.00	2000.000	0.00
0.108	0.00	0.796	1.33	5.857	2.40	43.089	5.62	316.979	0.00		
0.126	0.00	0.928	1.35	6.829	2.30	50.238	4.83	369.570	0.00		
0.147	0.00	1.082		7.962		58.573		430.887	0.00		

Particle Size Distribution



Result : Analysis Report

Attached page 37

Sample Details

Sample ID : WPWB-4C2_1

Measured : 21 มิถุนายน 2565 11:59:30

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 11:59:32

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

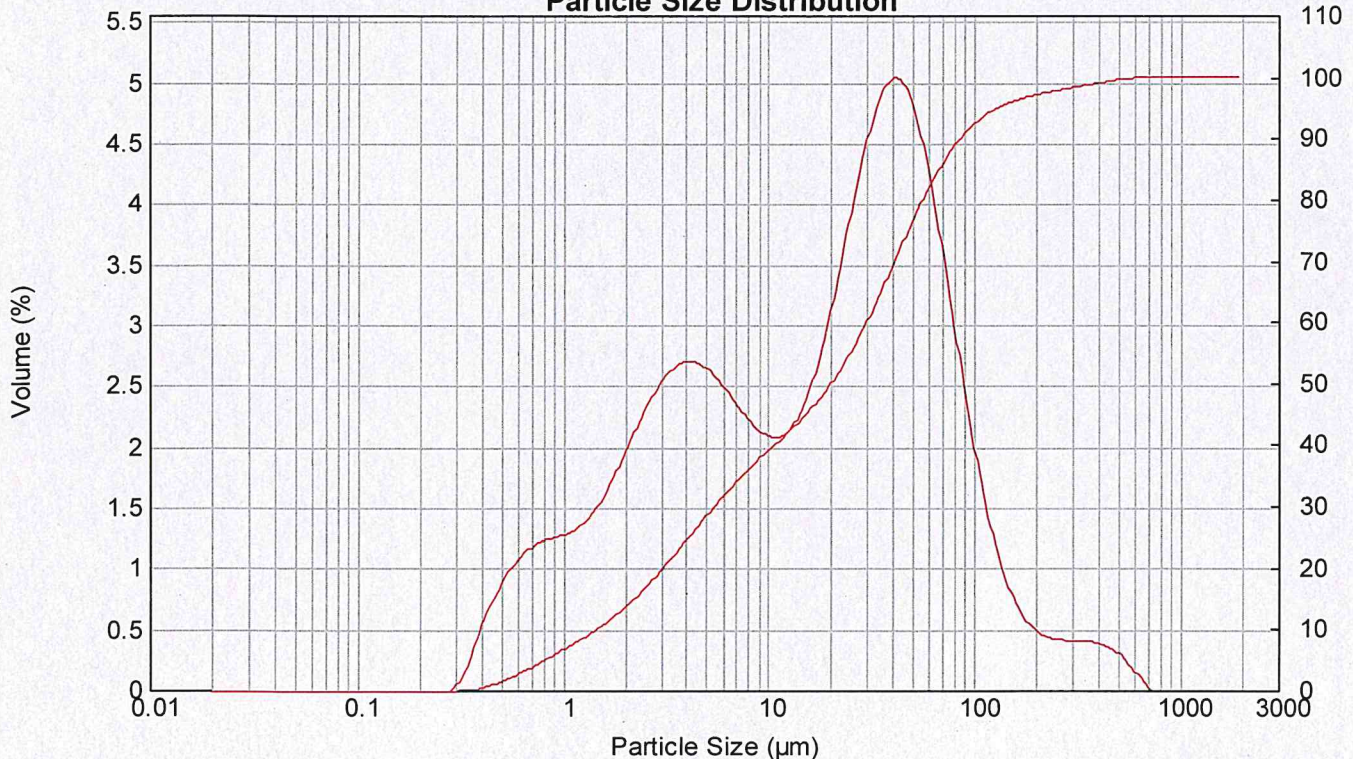
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 20.38 Residual (%) : 0.381
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0155 %Vol Specific Surface Area : 1.42 m²/g
Mean Diameters : D (0.1) : 1.47 um D (0.5) : 20.29 um D (0.9) : 86.08 um
D [4,3] : 39.64 um D [3,2] : 4.22 um Span : 4.171 Uniformity : 1.65

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.34	7.962	2.19	58.573	4.12	430.887	0.35
0.023	0.00	0.172	0.00	1.262	1.44	9.263	2.10	68.291	3.44	502.377	0.26
0.027	0.00	0.200	0.00	1.471	1.60	10.823	2.10	79.621	2.72	585.729	0.13
0.032	0.00	0.233	0.00	1.715	1.82	12.619	2.22	92.832	2.05	682.910	0.01
0.037	0.00	0.272	0.00	2.000	2.06	14.713	2.47	108.234	1.49	796.214	0.00
0.043	0.00	0.317	0.02	2.332	2.30	17.154	2.85	126.191	1.05	928.318	0.00
0.050	0.00	0.370	0.17	2.719	2.50	20.000	3.35	147.128	0.75	1082.339	0.00
0.059	0.00	0.431	0.75	3.170	2.64	23.318	3.91	171.539	0.56	1261.915	0.00
0.068	0.00	0.502	0.96	3.696	2.71	27.187	4.44	200.000	0.46	1471.285	0.00
0.080	0.00	0.586	1.11	4.309	2.70	31.698	4.85	233.183	0.42	1715.392	0.00
0.093	0.00	0.683	1.20	5.024	2.48	36.957	5.05	271.871	0.41	2000.000	0.00
0.108	0.00	0.796	1.25	5.857	2.33	43.089	4.99	316.979	0.39		
0.126	0.00	0.928	1.29	6.829		50.238		369.570			
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 38

Sample Details

Sample ID : WPWB-4C2_2

Measured : 21 มิถุนายน 2565 12:01:37

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182 sam_Tetrattech_lot2_91.mea

Analysed : 21 มิถุนายน 2565 12:01:39

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic batch before
analysis and stirring at 2000 rpm during measurement.

System Details

Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.95 Residual (%) : 0.803
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0164 %Vol Specific Surface Area : 1.27 m²/g
Mean Diameters : D (0.1) : 1.72 um D (0.5) : 22.27 um D (0.9) : 82.67 um
D [4,3] : 39.48 um D [3,2] : 4.72 um Span : 3.635 Uniformity : 1.46

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.18	7.962	2.15	58.573	4.35	430.887	0.32
0.023	0.00	0.172	0.00	1.262	1.28	9.283	2.04	68.291	3.52	502.377	0.24
0.027	0.00	0.200	0.00	1.471	1.46	10.823	2.03	79.621	2.69	585.729	0.13
0.032	0.00	0.233	0.00	1.715	1.70	12.619	2.15	92.832	1.94	682.910	0.01
0.037	0.00	0.272	0.01	2.000	1.98	14.713	2.43	108.234	1.34	796.214	0.00
0.043	0.00	0.317	0.10	2.332	2.26	17.154	2.87	126.191	0.92	928.318	0.00
0.050	0.00	0.370	0.36	2.719	2.50	20.000	3.46	147.128	0.64	1082.339	0.00
0.059	0.00	0.431	0.59	3.170	2.67	23.318	4.13	171.539	0.49	1261.915	0.00
0.068	0.00	0.502	0.79	3.696	2.75	27.187	4.79	200.000	0.43	1471.285	0.00
0.080	0.00	0.586	0.94	4.309	2.74	31.698	5.31	233.183	0.41	1715.392	0.00
0.093	0.00	0.683	1.04	5.024	2.64	36.957	5.56	271.871	0.40	2000.000	0.00
0.108	0.00	0.796	1.09	5.857	2.48	43.089	5.47	316.979	0.40		
0.126	0.00	0.928	1.12	6.829	2.31	50.238	5.04	369.570	0.38		
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



Result : Analysis Report

Attached page 39

Sample Details

Sample ID : WPWB-4C2_3

Measured : 21 มิถุนายน 2565 12:02:41

Sample File : C:\Users\001827\Desktop\งานเทค\Technical service\Tetra
MTEC0884_65_163-175 of 182

Analysed : 21 มิถุนายน 2565 12:02:42

Sample Notes : Dispersion medium : De-ionized water.
Treatment : Ultrasound 10 minutes with ultrasonic bath before
analysis and stirring at 2000 rpm during measurement.

System Details

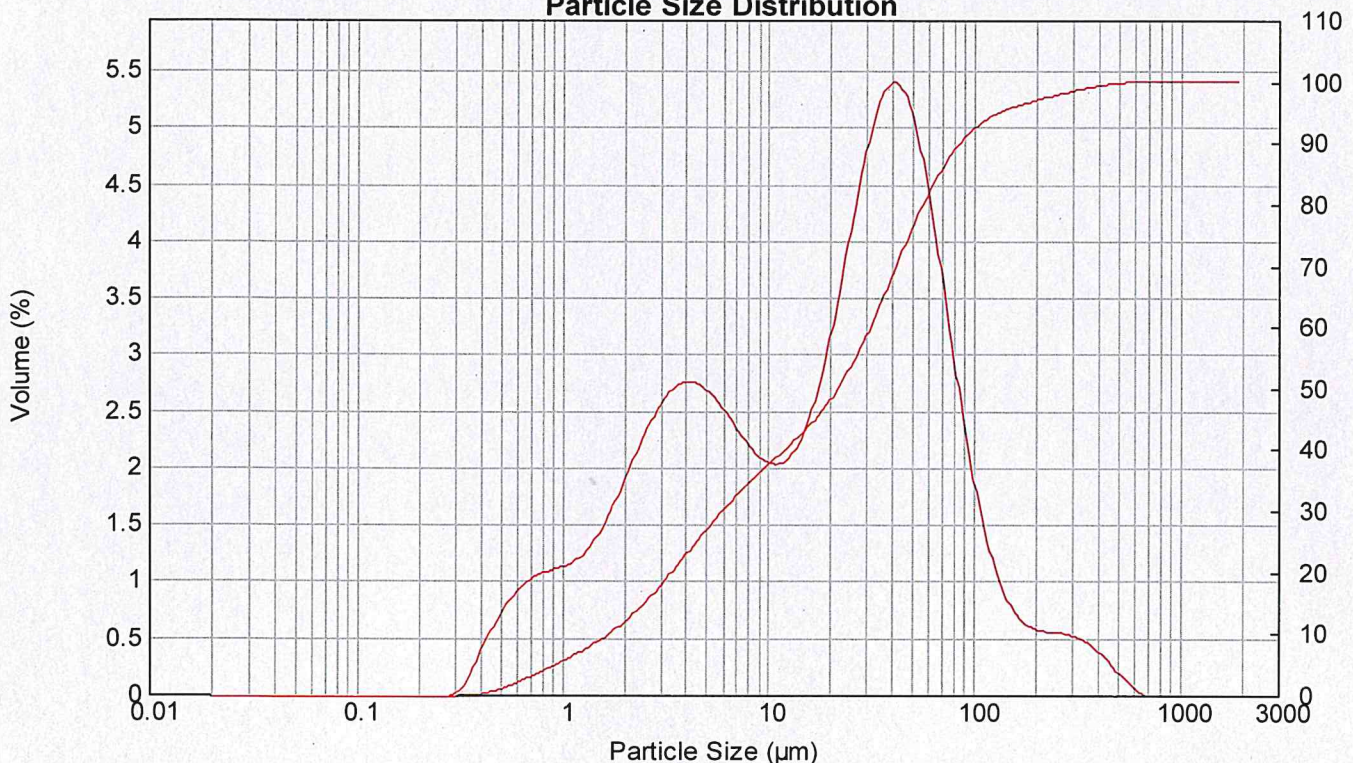
Accessory Name : Hydro 2000S (A) Beam Length (mm) : 2.35 Obscuration (%) : 19.79 Residual (%) : 0.772
Particle RI : 1.530 Absorption : 0.1 Dispersant Name : Water Dispersant RI : 1.330

Result Statistics

Distribution Type : Volume Concentration : 0.0162 %Vol Specific Surface Area : 1.28 m²/g
Mean Diameters : D (0.1) : 1.71 um D (0.5) : 22.08 um D (0.9) : 85.94 um
D [4,3] : 39.92 um D [3,2] : 4.69 um Span : 3.814 Uniformity : 1.5

Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %	Size (µm)	Volume In %
0.020	0.00	0.147	0.00	1.082	1.19	7.962	2.16	58.573	4.27	430.887	0.29
0.023	0.00	0.172	0.00	1.262	1.29	9.283	2.06	68.291	3.48	502.377	0.16
0.027	0.00	0.200	0.00	1.471	1.47	10.823	2.05	79.621	2.68	585.729	0.04
0.032	0.00	0.233	0.00	1.715	1.71	12.619	2.16	92.832	1.96	682.910	0.00
0.037	0.00	0.272	0.01	2.000	2.00	14.713	2.42	108.234	1.40	796.214	0.00
0.043	0.00	0.317	0.10	2.332	2.28	17.154	2.84	126.191	0.99	928.318	0.00
0.050	0.00	0.370	0.37	2.719	2.52	20.000	3.41	147.128	0.62	1082.339	0.00
0.059	0.00	0.431	0.59	3.170	2.69	23.318	4.05	171.539	0.74	1261.915	0.00
0.068	0.00	0.502	0.80	3.696	2.76	27.187	4.68	200.000	0.57	1471.285	0.00
0.080	0.00	0.586	0.95	4.309	2.75	31.698	5.17	233.183	0.54	1715.392	0.00
0.093	0.00	0.683	1.04	5.024	2.65	36.957	5.41	271.871	0.49	2000.000	0.00
0.108	0.00	0.796	1.09	5.857	2.50	43.089	5.32	316.979	0.40		
0.126	0.00	0.928	1.13	6.829	2.32	50.238	4.92	369.570			
0.147	0.00	1.082		7.962		58.573		430.887			

Particle Size Distribution



APPENDIX B
ANALYTICAL LABORATORY REPORTS:
SEAWATER

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-112739-6
Client Project/Site: Project T423.11

For:

Tetra Tech, Inc.
3697 Mt. Diablo Blvd.
Suite 150
Lafayette, California 94549

Attn: Ted Donn



Authorized for release by:
7/7/2022 9:33:48 AM

Lilly-Anna LaCount, Analyst II
(253)922-2310
Lilly-Anna.Lacount@et.eurofinsus.com

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Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Job ID: 580-112739-6

Laboratory: Eurofins Seattle

Narrative

Job Narrative 580-112739-6

Comments

No additional comments.

Receipt

The samples were received on 4/18/2022 12:35 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperatures of the 12 coolers at receipt time were -29.6° C, -17.1° C, -16.2° C, -14.6° C, -9.3° C, -5.1° C, -2.6° C, -0.1° C, 1.9° C, 2.3° C, 4.2° C and 11.6° C.

Metals

Method 1638: The matrix spike / matrix spike duplicate (MS/MSD) recoveries and precision for preparation batch 580-393450, 580-393467 and 580-393469 and analytical batch 580-395356 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample / laboratory sample control duplicate (LCS/LCSD) precision was within acceptance limits.

Method 1638: The method blank for preparation batch 580-393450, 580-393467 and 580-393469 and analytical batch 580-395356 contained Manganese above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 1638: The method blank for 580-393467 contained Copper and Iron above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

Method 1638: The method blank for 580-393467 contained Copper above the reporting limit (RL). Associated sample(s) were not re-extracted and/or re-analyzed because results were greater than 10X the value found in the method blank.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Qualifiers

Metals

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B	Compound was found in the blank and sample.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
□	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-A1

Lab Sample ID: 580-112739-627

Date Collected: 03/24/22 19:25

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 50.6

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	22		1.9	0.21	ng/g	☆	06/07/22 16:49	07/01/22 16:30	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.9		0.39	0.12	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Barium	180		39	0.078	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Cadmium	0.19		0.19	0.0039	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Chromium	42		0.39	0.39	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Copper	12	B	0.19	0.023	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Iron	20000		39	7.8	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Manganese	700	B	0.19	0.019	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Nickel	26		0.78	0.031	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Lead	21	B	0.16	0.016	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1
Zinc	42		3.9	1.9	mg/Kg	☆	06/16/22 11:41	06/28/22 09:42	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	49	H H3	0.10	0.10	%			06/05/22 16:39	1
Percent Solids	51	H H3	0.10	0.10	%			06/05/22 16:39	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-B1

Lab Sample ID: 580-112739-628

Date Collected: 03/24/22 19:37

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.0

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	22		2.0	0.22	ng/g	☆	06/08/22 12:59	06/24/22 15:46	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0		0.43	0.13	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Barium	220		43	0.086	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Cadmium	0.066	J	0.21	0.0043	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Chromium	46		0.43	0.43	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Copper	13	B	0.21	0.026	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Iron	22000		43	8.6	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Manganese	730	B	0.21	0.021	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Nickel	27		0.86	0.034	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Lead	21	B	0.17	0.017	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1
Zinc	45		4.3	2.1	mg/Kg	☆	06/16/22 11:41	06/28/22 09:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/05/22 16:39	1
Percent Solids	46	H H3	0.10	0.10	%			06/05/22 16:39	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-C1

Lab Sample ID: 580-112739-629

Date Collected: 03/24/22 19:53

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.1

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	23		2.0	0.22	ng/g	☆	06/08/22 12:59	06/24/22 15:50	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.6	B	0.40	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Barium	230	B	40	0.080	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Cadmium	0.077	J B	0.20	0.0040	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Chromium	50	B	0.40	0.40	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Copper	13	B	0.20	0.024	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Iron	22000	B	40	8.0	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Manganese	660	B	0.20	0.020	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Nickel	29	B	0.80	0.032	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Lead	21	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1
Zinc	48		4.0	2.0	mg/Kg	☆	06/16/22 13:28	06/28/22 07:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B1Y

Lab Sample ID: 580-112739-630

Date Collected: 03/24/22 11:24

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.5

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	43		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 16:35	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.9	B	0.42	0.13	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Barium	14000	B	42	0.085	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Cadmium	0.070	J B	0.21	0.0042	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Chromium	43	B	0.42	0.42	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Copper	12	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Iron	20000	F1 B	42	8.5	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Manganese	820	F1 B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Nickel	25	B	0.85	0.034	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Lead	20	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1
Zinc	47		4.2	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 07:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	46	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y

Lab Sample ID: 580-112739-631

Date Collected: 03/24/22 08:45

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.8

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	230		20	2.2	ng/g	☆	06/08/22 12:59	06/24/22 18:11	200

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	9.2	B	0.38	0.11	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Barium	29000	B	380	0.76	mg/Kg	☆	06/16/22 13:28	06/28/22 15:03	10
Cadmium	0.098	J B	0.19	0.0038	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Chromium	33	B	0.38	0.38	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Copper	14	B	0.19	0.023	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Iron	16000	B	38	7.6	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Manganese	310	B	0.19	0.019	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Nickel	17	B	0.76	0.030	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Lead	16	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1
Zinc	44		3.8	1.9	mg/Kg	☆	06/16/22 13:28	06/28/22 09:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	52	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	48	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B3X

Lab Sample ID: 580-112739-632

Date Collected: 03/24/22 09:02

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.3

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	79		1.9	0.20	ng/g	☆	06/08/22 12:59	07/01/22 16:39	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.6	B	0.41	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Barium	32000	B	410	0.81	mg/Kg	☆	06/16/22 13:28	06/28/22 15:08	10
Cadmium	0.94	B	0.20	0.0041	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Chromium	30	B	0.41	0.41	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Copper	15	B	0.20	0.024	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Iron	13000	B	41	8.1	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Manganese	440	B	0.20	0.020	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Nickel	18	B	0.81	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Lead	16	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1
Zinc	42		4.1	2.0	mg/Kg	☆	06/16/22 13:28	06/28/22 09:56	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	52	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	48	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1C1

Lab Sample ID: 580-112739-633

Date Collected: 03/24/22 12:25

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.9

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	35		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 16:43	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	7.0	B	0.42	0.13	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Barium	7600	B	42	0.084	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Cadmium	0.066	J B	0.21	0.0042	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Chromium	51	B	0.42	0.42	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Copper	14	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Iron	23000	B	42	8.4	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Manganese	780	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Nickel	29	B	0.84	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Lead	23	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1
Zinc	51		4.2	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:09	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1C1-FD

Lab Sample ID: 580-112739-634

Date Collected: 03/24/22 12:33

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.4

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	34		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 16:47	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.3	B	0.38	0.11	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Barium	8500	B	38	0.076	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Cadmium	0.077	J B	0.19	0.0038	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Chromium	48	B	0.38	0.38	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Copper	15	B	0.19	0.023	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Iron	22000	B	38	7.6	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Manganese	890	B	0.19	0.019	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Nickel	28	B	0.76	0.030	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Lead	23	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1
Zinc	49		3.8	1.9	mg/Kg	☆	06/16/22 13:28	06/28/22 10:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1C2

Lab Sample ID: 580-112739-635

Date Collected: 03/24/22 12:47

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.8

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	64		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 16:51	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.2	B	0.41	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Barium	32000	B	410	0.83	mg/Kg	☆	06/16/22 13:28	06/28/22 15:12	10
Cadmium	0.093	J B	0.21	0.0041	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Chromium	45	B	0.41	0.41	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Copper	15	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Iron	21000	B	41	8.3	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Manganese	480	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Nickel	25	B	0.83	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Lead	21	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1
Zinc	51		4.1	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	46	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1C3

Lab Sample ID: 580-112739-636

Date Collected: 03/24/22 13:03

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.5

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	74		1.9	0.21	ng/g	☆	06/08/22 12:59	07/01/22 16:55	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.9	B	0.36	0.11	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Barium	18000	B	36	0.073	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Cadmium	0.11	J B	0.18	0.0036	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Chromium	41	B	0.36	0.36	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Copper	15	B	0.18	0.022	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Iron	20000	B	36	7.3	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Manganese	510	B	0.18	0.018	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Nickel	24	B	0.73	0.029	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Lead	21	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1
Zinc	46		3.6	1.8	mg/Kg	☆	06/16/22 13:28	06/28/22 10:22	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	52	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	48	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1D1

Lab Sample ID: 580-112739-637

Date Collected: 03/24/22 13:59

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.1

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	28		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 17:00	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.5	B	0.38	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Barium	1300	B	38	0.077	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Cadmium	0.078	J B	0.19	0.0038	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Chromium	50	B	0.38	0.38	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Copper	14	B	0.19	0.023	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Iron	22000	B	38	7.7	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Manganese	830	B	0.19	0.019	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Nickel	29	B	0.77	0.031	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Lead	24	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1
Zinc	50		3.8	1.9	mg/Kg	☆	06/16/22 13:28	06/28/22 10:27	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	46	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1D2

Lab Sample ID: 580-112739-638

Date Collected: 03/24/22 13:41

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.9

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	31		2.2	0.24	ng/g	☆	06/08/22 12:59	07/01/22 17:04	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.3	B	0.42	0.13	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Barium	1900	B	42	0.084	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Cadmium	0.12	J B	0.21	0.0042	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Chromium	38	B	0.42	0.42	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Copper	11	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Iron	18000	B	42	8.4	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Manganese	660	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Nickel	23	B	0.84	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Lead	18	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1
Zinc	37		4.2	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:31	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	46	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1D3

Lab Sample ID: 580-112739-639

Date Collected: 03/24/22 13:24

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.4

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	26		2.1	0.23	ng/g	☆	06/08/22 12:59	07/01/22 17:16	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.9	B	0.40	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Barium	2400	B	40	0.079	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Cadmium	0.099	J B	0.20	0.0040	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Chromium	46	B	0.40	0.40	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Copper	13	B	0.20	0.024	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Iron	22000	B	40	7.9	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Manganese	720	B	0.20	0.020	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Nickel	28	B	0.79	0.032	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Lead	22	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1
Zinc	45		4.0	2.0	mg/Kg	☆	06/16/22 13:28	06/28/22 10:35	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	52	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	48	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-2B1X

Lab Sample ID: 580-112739-640

Date Collected: 03/24/22 09:45

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 43.2

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	40		2.3	0.25	ng/g	☆	06/08/22 12:59	07/01/22 17:21	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.7	B	0.42	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Barium	13000	B	42	0.083	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Cadmium	0.088	J B	0.21	0.0042	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Chromium	50	B	0.42	0.42	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Copper	15	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Iron	23000	B	42	8.3	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Manganese	620	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Nickel	29	B	0.83	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Lead	24	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1
Zinc	55		4.2	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:40	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	57	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	43	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-2C2

Lab Sample ID: 580-112739-641

Date Collected: 03/24/22 10:00

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.2

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	29		1.9	0.21	ng/g	☆	06/08/22 12:59	07/01/22 17:25	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.2	B	0.42	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Barium	2200	B	42	0.083	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Cadmium	0.089	J B	0.21	0.0042	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Chromium	41	B	0.42	0.42	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Copper	12	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Iron	19000	B	42	8.3	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Manganese	780	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Nickel	25	B	0.83	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Lead	21	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1
Zinc	43		4.2	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:44	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B1X

Lab Sample ID: 580-112739-642

Date Collected: 03/24/22 11:06

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.0

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	53		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 17:29	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.7	B	0.41	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Barium	8800	B	41	0.082	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Cadmium	0.069	J B	0.21	0.0041	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Chromium	43	B	0.41	0.41	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Copper	14	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Iron	20000	B	41	8.2	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Manganese	510	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Nickel	25	B	0.82	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Lead	21	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1
Zinc	48		4.1	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 10:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X

Lab Sample ID: 580-112739-643

Date Collected: 03/24/22 05:32

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.8

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	65		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 17:33	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0	B	0.36	0.11	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Barium	20000	B	360	0.73	mg/Kg	☆	06/16/22 13:28	06/28/22 15:21	10
Cadmium	0.096	J B	0.18	0.0036	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Chromium	38	B	0.36	0.36	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Copper	13	B	0.18	0.022	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Iron	19000	B	36	7.3	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Manganese	500	B	0.18	0.018	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Nickel	22	B	0.73	0.029	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Lead	20	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1
Zinc	45		3.6	1.8	mg/Kg	☆	06/16/22 13:28	06/28/22 11:02	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	51	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	49	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B3X

Lab Sample ID: 580-112739-644

Date Collected: 03/24/22 05:48

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.2

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	29		2.2	0.24	ng/g	☆	06/08/22 12:59	07/01/22 17:37	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	12	B	0.41	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Barium	8600	B	41	0.083	mg/Kg	☆	06/16/22 13:28	06/28/22 15:26	1
Cadmium	0.066	J B	0.21	0.0041	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Chromium	78	B	0.41	0.41	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Copper	23	B	0.21	0.025	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Iron	42000	B	41	8.3	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Manganese	700	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Nickel	40	B	0.83	0.033	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Lead	34	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1
Zinc	79		4.1	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 11:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	55	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	45	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3C1

Lab Sample ID: 580-112739-645

Date Collected: 03/24/22 02:04

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.2

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	29		2.0	0.22	ng/g	☆	06/08/22 12:59	07/01/22 17:42	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.8	B	0.36	0.11	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Barium	5200	B	36	0.073	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Cadmium	0.089	J B	0.18	0.0036	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Chromium	47	B	0.36	0.36	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Copper	13	B	0.18	0.022	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Iron	21000	B	36	7.3	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Manganese	590	B	0.18	0.018	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Nickel	27	B	0.73	0.029	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Lead	21	B	0.15	0.015	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1
Zinc	48		3.6	1.8	mg/Kg	☆	06/16/22 13:28	06/28/22 11:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	52	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	48	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3C2

Lab Sample ID: 580-112739-646

Date Collected: 03/24/22 02:21

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.1

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	36		2.1	0.23	ng/g	☆	06/08/22 12:59	07/01/22 17:46	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.0	B	0.43	0.13	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Barium	5200	B	43	0.086	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Cadmium	0.096	J B	0.21	0.0043	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Chromium	40	B	0.43	0.43	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Copper	12	B	0.21	0.026	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Iron	18000	B	43	8.6	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Manganese	760	B	0.21	0.021	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Nickel	23	B	0.86	0.034	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Lead	19	B	0.17	0.017	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1
Zinc	42		4.3	2.1	mg/Kg	☆	06/16/22 13:28	06/28/22 11:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	54	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	46	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3C3

Lab Sample ID: 580-112739-647

Date Collected: 03/24/22 02:39

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.7

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	39		1.8	0.20	ng/g	☆	06/08/22 12:59	07/01/22 17:50	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.6	B	0.40	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Barium	16000	B	40	0.081	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Cadmium	0.10	J B	0.20	0.0040	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Chromium	44	B	0.40	0.40	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Copper	13	B	0.20	0.024	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Iron	20000	B	40	8.1	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Manganese	540	B	0.20	0.020	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Nickel	26	B	0.81	0.032	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Lead	20	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1
Zinc	47		4.0	2.0	mg/Kg	☆	06/16/22 13:28	06/28/22 11:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	51	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	49	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3D1

Lab Sample ID: 580-112739-648

Date Collected: 03/24/22 01:42

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 50.6

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	21	B	1.9	0.21	ng/g	☆	06/08/22 13:04	06/27/22 16:21	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.9	B	0.39	0.12	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Barium	960	B	39	0.079	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Cadmium	0.11	J B	0.20	0.0039	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Chromium	40	B	0.39	0.39	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Copper	12	B	0.20	0.024	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Iron	19000	B	39	7.9	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Manganese	840	B	0.20	0.020	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Nickel	24	B	0.79	0.032	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Lead	19	B	0.16	0.016	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1
Zinc	39		3.9	2.0	mg/Kg	☆	06/16/22 13:28	06/28/22 11:24	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	49	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	51	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3D2

Lab Sample ID: 580-112739-649

Date Collected: 03/24/22 01:20

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.2

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	22	B	2.0	0.22	ng/g	☆	06/08/22 13:04	06/27/22 16:25	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.4		0.38	0.12	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Barium	720	F1 B	38	0.077	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Cadmium	0.089	J	0.19	0.0038	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Chromium	40	B	0.38	0.38	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Copper	11	B	0.19	0.023	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Iron	18000	B	38	7.7	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Manganese	620	B	0.19	0.019	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Nickel	24	B	0.77	0.031	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Lead	19		0.15	0.015	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1
Zinc	39		3.8	1.9	mg/Kg	☆	06/17/22 10:46	06/28/22 07:47	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	51	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	49	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3D3

Lab Sample ID: 580-112739-650

Date Collected: 03/24/22 00:56

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.8

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	40	B	5.3	0.59	ng/g	☆	06/08/22 13:04	06/27/22 16:46	50

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.8		0.42	0.13	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Barium	1400	B	42	0.084	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Cadmium	0.065	J	0.21	0.0042	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Chromium	44	B	0.42	0.42	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Copper	12	B	0.21	0.025	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Iron	20000	F1 B	42	8.4	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Manganese	770	F1 B	0.21	0.021	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Nickel	26	B	0.84	0.034	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Lead	21		0.17	0.017	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1
Zinc	43		4.2	2.1	mg/Kg	☆	06/17/22 10:46	06/28/22 08:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	53	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	47	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-4B1X

Lab Sample ID: 580-112739-651

Date Collected: 03/24/22 03:51

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.7

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	18	B	2.0	0.22	ng/g	☆	06/08/22 13:04	07/01/22 17:54	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	5.2		0.35	0.11	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Barium	1200	B	35	0.071	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Cadmium	0.12	J	0.18	0.0035	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Chromium	60	B	0.35	0.35	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Copper	16	B	0.18	0.021	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Iron	27000	B	35	7.1	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Manganese	700	B	0.18	0.018	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Nickel	35	B	0.71	0.028	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Lead	26		0.14	0.014	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1
Zinc	56		3.5	1.8	mg/Kg	☆	06/17/22 10:46	06/28/22 11:28	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	50	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	50	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-4C2

Lab Sample ID: 580-112739-652

Date Collected: 03/24/22 02:57

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.7

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	31	B	4.9	0.54	ng/g	☆	06/08/22 13:04	07/01/22 18:07	50

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.7		0.40	0.12	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Barium	1800	B	40	0.080	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Cadmium	0.065	J	0.20	0.0040	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Chromium	40	B	0.40	0.40	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Copper	11	B	0.20	0.024	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Iron	19000	B	40	8.0	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Manganese	720	B	0.20	0.020	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Nickel	24	B	0.80	0.032	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Lead	19		0.16	0.016	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1
Zinc	40		4.0	2.0	mg/Kg	☆	06/17/22 10:46	06/28/22 11:33	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	50	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	50	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-4C2-FD

Lab Sample ID: 580-112739-653

Date Collected: 03/24/22 03:06

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.1

Method: 1631B - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	26	B	2.0	0.22	ng/g	☆	06/08/22 13:04	07/01/22 18:11	20

Method: 1638 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.2		0.40	0.12	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Barium	1400	B	40	0.079	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Cadmium	0.060	J	0.20	0.0040	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Chromium	38	B	0.40	0.40	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Copper	11	B	0.20	0.024	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Iron	17000	B	40	7.9	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Manganese	600	B	0.20	0.020	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Nickel	22	B	0.79	0.032	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Lead	18		0.16	0.016	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1
Zinc	35		4.0	2.0	mg/Kg	☆	06/17/22 10:46	06/28/22 11:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	51	H H3	0.10	0.10	%			06/08/22 09:13	1
Percent Solids	49	H H3	0.10	0.10	%			06/08/22 09:13	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-SW-1

Lab Sample ID: 580-112739-654

Date Collected: 03/24/22 17:08

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.49	J	0.50	0.079	ng/L			06/21/22 13:22	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 17:00	1
Cadmium	0.033	J	0.040	0.011	ug/L		05/02/22 17:22	05/04/22 17:00	1
Chromium	0.40	J	0.50	0.34	ug/L		05/02/22 17:22	05/04/22 17:00	1
Copper	0.20		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 17:00	1
Lead	0.16		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 17:00	1
Nickel	0.18	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 17:00	1
Zinc	0.14	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 17:00	1
Barium	8.4		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 17:00	1
Iron	1.1	J	5.0	1.1	ug/L		05/02/22 17:22	05/04/22 17:00	1
Manganese	0.91		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 17:00	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-SW-20

Lab Sample ID: 580-112739-655

Date Collected: 03/24/22 17:17

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.29	J	0.50	0.079	ng/L			06/21/22 14:37	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 17:14	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 17:14	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 17:14	1
Copper	0.17		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 17:14	1
Lead	0.017	J	0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 17:14	1
Nickel	0.18	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 17:14	1
Zinc	0.092	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 17:14	1
Barium	8.2		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 17:14	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 17:14	1
Manganese	0.52		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 17:14	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-SW-40

Lab Sample ID: 580-112739-656

Date Collected: 03/24/22 17:29

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.29	J	0.50	0.079	ng/L			06/21/22 14:42	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.6		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 17:28	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 17:28	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 17:28	1
Copper	0.15		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 17:28	1
Lead	0.014	J	0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 17:28	1
Nickel	0.15	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 17:28	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 17:28	1
Barium	8.0		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 17:28	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 17:28	1
Manganese	0.27		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 17:28	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-SW-B

Lab Sample ID: 580-112739-657

Date Collected: 03/24/22 17:40

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.39	J	0.50	0.079	ng/L			06/21/22 15:11	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.8		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 17:43	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 17:43	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 17:43	1
Copper	0.15		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 17:43	1
Lead	0.034		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 17:43	1
Nickel	0.18	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 17:43	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 17:43	1
Barium	9.3		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 17:43	1
Iron	17		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 17:43	1
Manganese	1.1		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 17:43	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-1

Lab Sample ID: 580-112739-658

Date Collected: 03/24/22 07:16

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.35	J	0.50	0.079	ng/L			06/21/22 15:15	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 17:57	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 17:57	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 17:57	1
Copper	0.21		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 17:57	1
Lead	0.43		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 17:57	1
Nickel	0.17	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 17:57	1
Zinc	0.22	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 17:57	1
Barium	8.1		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 17:57	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 17:57	1
Manganese	0.33		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 17:57	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-1-FD

Lab Sample ID: 580-112739-659

Date Collected: 03/24/22 07:23

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.38	J	0.50	0.079	ng/L			06/21/22 15:19	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 18:11	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 18:11	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 18:11	1
Copper	0.16		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 18:11	1
Lead	0.020	J	0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 18:11	1
Nickel	0.16	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 18:11	1
Zinc	0.073	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 18:11	1
Barium	8.2		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 18:11	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 18:11	1
Manganese	0.31		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 18:11	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-20

Lab Sample ID: 580-112739-660

Date Collected: 03/24/22 07:29

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.48	J	0.50	0.079	ng/L			06/21/22 15:23	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 15:34	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 15:34	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 15:34	1
Copper	0.17		0.10	0.020	ug/L		05/02/22 17:16	05/04/22 15:34	1
Lead	0.014	J B	0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 15:34	1
Nickel	0.17	J	0.30	0.11	ug/L		05/02/22 17:16	05/04/22 15:34	1
Zinc	0.082	J	0.50	0.070	ug/L		05/02/22 17:16	05/04/22 15:34	1
Barium	8.2		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 15:34	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 15:34	1
Manganese	0.30		0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 15:34	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-40

Lab Sample ID: 580-112739-661

Date Collected: 03/24/22 07:39

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.40	J	0.50	0.079	ng/L			06/21/22 15:28	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 15:49	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 15:49	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 15:49	1
Copper	0.16		0.10	0.020	ug/L		05/02/22 17:16	05/04/22 15:49	1
Lead	0.012	J B	0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 15:49	1
Nickel	0.16	J	0.30	0.11	ug/L		05/02/22 17:16	05/04/22 15:49	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:16	05/04/22 15:49	1
Barium	8.2		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 15:49	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 15:49	1
Manganese	0.28		0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 15:49	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-B

Lab Sample ID: 580-112739-662

Date Collected: 03/24/22 07:52

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.51		0.50	0.079	ng/L			06/21/22 15:32	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 07:29	1
Cadmium	0.011	J	0.040	0.011	ug/L		05/02/22 17:22	05/04/22 07:29	1
Chromium	0.43	J	0.50	0.34	ug/L		05/02/22 17:22	05/04/22 07:29	1
Copper	0.96		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 07:29	1
Lead	0.083		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 07:29	1
Nickel	0.22	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 07:29	1
Zinc	0.49	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 07:29	1
Barium	8.9		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 07:29	1
Iron	20		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 07:29	1
Manganese	1.2		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 07:29	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X-SW-1

Lab Sample ID: 580-112739-663

Date Collected: 03/24/22 04:19

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.52		0.50	0.079	ng/L			06/21/22 15:44	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.6		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 08:40	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 08:40	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 08:40	1
Copper	0.21		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 08:40	1
Lead	0.22		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 08:40	1
Nickel	0.21	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 08:40	1
Zinc	0.25	J	0.50	0.070	ug/L		05/02/22 17:22	05/04/22 08:40	1
Barium	8.1		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 08:40	1
Iron	2.8	J	5.0	1.1	ug/L		05/02/22 17:22	05/04/22 08:40	1
Manganese	0.37		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 08:40	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X-SW-20

Lab Sample ID: 580-112739-664

Date Collected: 03/24/22 04:27

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.43	J	0.50	0.079	ng/L			06/21/22 15:49	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.5		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 16:03	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 16:03	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 16:03	1
Copper	0.17		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 16:03	1
Lead	0.063		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 16:03	1
Nickel	0.16	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 16:03	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 16:03	1
Barium	8.3		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 16:03	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 16:03	1
Manganese	0.30		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 16:03	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X-SW-40

Lab Sample ID: 580-112739-665

Date Collected: 03/24/22 04:37

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.43	J	0.50	0.079	ng/L			06/22/22 18:18	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 16:17	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 16:17	1
Chromium	0.35	J	0.50	0.34	ug/L		05/02/22 17:22	05/04/22 16:17	1
Copper	0.16		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 16:17	1
Lead	0.015	J	0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 16:17	1
Nickel	0.17	J	0.30	0.11	ug/L		05/02/22 17:22	05/04/22 16:17	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 16:17	1
Barium	8.3		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 16:17	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 16:17	1
Manganese	0.33		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 16:17	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X-SW-B

Lab Sample ID: 580-112739-666

Date Collected: 03/24/22 04:50

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.35	J	0.50	0.079	ng/L			06/22/22 18:26	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.8		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 14:08	1
Cadmium	0.011	J	0.040	0.011	ug/L		05/02/22 17:16	05/04/22 14:08	1
Chromium	0.45	J	0.50	0.34	ug/L		05/02/22 17:16	05/04/22 14:08	1
Copper	0.16		0.10	0.020	ug/L		05/02/22 17:16	05/04/22 14:08	1
Lead	0.036	B	0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 14:08	1
Nickel	0.19	J	0.30	0.11	ug/L		05/02/22 17:16	05/04/22 14:08	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:16	05/04/22 14:08	1
Barium	10		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 14:08	1
Iron	16		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 14:08	1
Manganese	0.97		0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 14:08	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-EQ

Lab Sample ID: 580-112739-667

Date Collected: 03/24/22 00:35

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.35	J	0.50	0.079	ng/L			06/22/22 18:22	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 14:23	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 14:23	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 14:23	1
Copper	0.027	J	0.10	0.020	ug/L		05/02/22 17:16	05/04/22 14:23	1
Lead	0.014	J B	0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 14:23	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:16	05/04/22 14:23	1
Zinc	0.21	J	0.50	0.070	ug/L		05/02/22 17:16	05/04/22 14:23	1
Barium	ND		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 14:23	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 14:23	1
Manganese	0.039	J	0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 14:23	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-WB

Lab Sample ID: 580-112739-668

Date Collected: 03/24/22 00:32

Matrix: Water

Date Received: 04/18/22 12:35

Method: 1631E - Mercury, Low Level (CVAFS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.27	J	0.50	0.079	ng/L			06/22/22 18:30	1

Method: 1640 - Metals (ICPMS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 14:37	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 14:37	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 14:37	1
Copper	0.025	J	0.10	0.020	ug/L		05/02/22 17:16	05/04/22 14:37	1
Lead	ND		0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 14:37	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:16	05/04/22 14:37	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:16	05/04/22 14:37	1
Barium	ND		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 14:37	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 14:37	1
Manganese	0.019	J	0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 14:37	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1631B - Mercury, Low Level (CVAFS)

Lab Sample ID: MB 580-393094/1-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393094

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/07/22 16:49	06/24/22 12:26	20

Lab Sample ID: MB 580-393094/2-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393094

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/07/22 16:49	06/24/22 12:30	20

Lab Sample ID: MB 580-393094/3-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393094

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/07/22 16:49	06/24/22 12:34	20

Lab Sample ID: LCS 580-393094/4-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 393094

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	402	358		ng/g		89	75 - 125

Lab Sample ID: LCSD 580-393094/5-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 393094

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	402	377		ng/g		94	75 - 125	5	24

Lab Sample ID: MB 580-393145/1-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/08/22 12:59	06/24/22 12:47	20

Lab Sample ID: MB 580-393145/2-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/08/22 12:59	06/24/22 12:51	20

Lab Sample ID: MB 580-393145/3-A
Matrix: Solid
Analysis Batch: 395046

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393145

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/08/22 12:59	06/24/22 12:55	20

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1631B - Mercury, Low Level (CVAFS)

Lab Sample ID: LCS 580-393145/4-A

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	402	375		ng/g		93	75 - 125

Lab Sample ID: LCSD 580-393145/5-A

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	402	380		ng/g		95	75 - 125	1	24

Lab Sample ID: 580-112739-628 MS

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: CBREF-B1

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	22		871	823		ng/g	✱	92	71 - 125

Lab Sample ID: 580-112739-628 MSD

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: CBREF-B1

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	22		832	772		ng/g	✱	90	71 - 125	6	24

Lab Sample ID: 580-112739-629 MS

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: CBREF-C1

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	23		847	854		ng/g	✱	98	71 - 125

Lab Sample ID: 580-112739-629 MSD

Matrix: Solid

Analysis Batch: 395046

Client Sample ID: CBREF-C1

Prep Type: Total/NA

Prep Batch: 393145

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	23		840	821		ng/g	✱	95	71 - 125	4	24

Lab Sample ID: MB 580-393162/1-A

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393162

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/08/22 13:04	06/27/22 13:26	20

Lab Sample ID: MB 580-393162/2-A

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393162

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		1.0	0.11	ng/g		06/08/22 13:04	06/27/22 13:30	20

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1631B - Mercury, Low Level (CVAFS)

Lab Sample ID: MB 580-393162/3-A

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393162

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.187	J	1.0	0.11	ng/g		06/08/22 13:04	06/27/22 13:42	20

Lab Sample ID: LCS 580-393162/4-A

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	402	386		ng/g		96	75 - 125

Lab Sample ID: LCSD 580-393162/5-A

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	402	371		ng/g		92	75 - 125	4	24

Lab Sample ID: 580-112739-648 MS

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: WPWB-3D1

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	21	B	780	752		ng/g	✱	94	71 - 125

Lab Sample ID: 580-112739-648 MSD

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: WPWB-3D1

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	21	B	780	762		ng/g	✱	95	71 - 125	1	24

Lab Sample ID: 580-112739-649 MS

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	22	B	814	780		ng/g	✱	93	71 - 125

Lab Sample ID: 580-112739-649 MSD

Matrix: Solid

Analysis Batch: 395181

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Prep Batch: 393162

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	22	B	813	733		ng/g	✱	88	71 - 125	6	24

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1631E - Mercury, Low Level (CVAFS)

Lab Sample ID: MB 580-392619/1-A
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.530		0.50	0.079	ng/L			06/21/22 13:18	1

Lab Sample ID: MB 580-394549/14
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/21/22 12:36	1

Lab Sample ID: MB 580-394549/15
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/21/22 12:40	1

Lab Sample ID: MB 580-394549/16
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/21/22 12:44	1

Lab Sample ID: LCS 580-394549/17
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.00	4.84		ng/L		97	77 - 123

Lab Sample ID: LCSD 580-394549/18
Matrix: Water
Analysis Batch: 394549

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.00	4.94		ng/L		99	77 - 123	2	24

Lab Sample ID: 580-112739-654 MS
Matrix: Water
Analysis Batch: 394549

Client Sample ID: CBREF-SW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	0.49	J	5.00	4.75		ng/L		85	71 - 125

Lab Sample ID: 580-112739-654 MSD
Matrix: Water
Analysis Batch: 394549

Client Sample ID: CBREF-SW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	0.49	J	5.00	4.79		ng/L		86	71 - 125	1	24

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1631E - Mercury, Low Level (CVAFS)

Lab Sample ID: MB 580-394705/11
Matrix: Water
Analysis Batch: 394705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/22/22 12:47	1

Lab Sample ID: MB 580-394705/12
Matrix: Water
Analysis Batch: 394705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/22/22 12:51	1

Lab Sample ID: MB 580-394705/13
Matrix: Water
Analysis Batch: 394705

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.50	0.079	ng/L			06/22/22 12:55	1

Lab Sample ID: LCS 580-394705/14
Matrix: Water
Analysis Batch: 394705

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Mercury	5.00	4.56		ng/L		91	77 - 123

Lab Sample ID: LCSD 580-394705/15
Matrix: Water
Analysis Batch: 394705

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury	5.00	5.29		ng/L		106	77 - 123	15	24

Method: 1638 - Metals (ICP/MS)

Lab Sample ID: MB 580-393450/1-A
Matrix: Solid
Analysis Batch: 395356

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 393450

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.060	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Barium	ND		20	0.040	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Cadmium	ND		0.10	0.0020	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Chromium	ND		0.20	0.20	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Copper	0.0356	J	0.10	0.012	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Iron	ND		20	4.0	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Manganese	0.0221	J	0.10	0.010	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Nickel	ND		0.40	0.016	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Lead	0.00888	J	0.080	0.0080	mg/Kg		06/16/22 11:41	06/28/22 05:42	1
Zinc	ND		2.0	1.0	mg/Kg		06/16/22 11:41	06/28/22 05:42	1

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-393450/2-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393450

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.060	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Barium	ND		20	0.040	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Cadmium	ND		0.10	0.0020	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Chromium	ND		0.20	0.20	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Copper	0.0771	J	0.10	0.012	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Iron	ND		20	4.0	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Manganese	0.0466	J	0.10	0.010	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Nickel	ND		0.40	0.016	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Lead	0.0111	J	0.080	0.0080	mg/Kg		06/16/22 11:41	06/28/22 05:46	1
Zinc	ND		2.0	1.0	mg/Kg		06/16/22 11:41	06/28/22 05:46	1

Lab Sample ID: LCS 580-393450/3-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 393450

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	100	102		mg/Kg		102	75 - 125
Barium	100	105	J	mg/Kg		105	75 - 125
Cadmium	80.0	81.3		mg/Kg		102	75 - 125
Chromium	100	100		mg/Kg		100	75 - 125
Copper	100	104		mg/Kg		104	75 - 125
Iron	2500	2550		mg/Kg		102	75 - 125
Manganese	100	99.4		mg/Kg		99	75 - 125
Nickel	100	103		mg/Kg		103	75 - 125
Lead	100	100		mg/Kg		100	75 - 125
Zinc	100	101		mg/Kg		101	75 - 125

Lab Sample ID: LCSD 580-393450/4-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393450

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	100	103		mg/Kg		103	75 - 125	1	20
Barium	100	101	J	mg/Kg		101	75 - 125	4	20
Cadmium	80.0	83.0		mg/Kg		104	75 - 125	2	20
Chromium	100	101		mg/Kg		101	75 - 125	1	20
Copper	100	106		mg/Kg		106	75 - 125	2	20
Iron	2500	2580		mg/Kg		103	75 - 125	1	20
Manganese	100	102		mg/Kg		102	75 - 125	2	20
Nickel	100	105		mg/Kg		105	75 - 125	2	20
Lead	100	105		mg/Kg		105	75 - 125	5	20
Zinc	100	104		mg/Kg		104	75 - 125	2	20

Lab Sample ID: MB 580-393467/1-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393467

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.060	mg/Kg		06/16/22 13:28	06/28/22 05:51	1

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-393467/1-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393467

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	0.414	J	20	0.040	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Cadmium	ND		0.10	0.0020	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Chromium	ND		0.20	0.20	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Copper	0.123		0.10	0.012	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Iron	7.40	J	20	4.0	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Manganese	0.195		0.10	0.010	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Nickel	0.0288	J	0.40	0.016	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Lead	0.0121	J	0.080	0.0080	mg/Kg		06/16/22 13:28	06/28/22 05:51	1
Zinc	ND		2.0	1.0	mg/Kg		06/16/22 13:28	06/28/22 05:51	1

Lab Sample ID: MB 580-393467/2-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393467

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0875	J	0.20	0.060	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Barium	1.02	J	20	0.040	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Cadmium	0.0593	J	0.10	0.0020	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Chromium	0.249		0.20	0.20	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Copper	0.138		0.10	0.012	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Iron	33.3		20	4.0	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Manganese	0.711		0.10	0.010	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Nickel	0.105	J	0.40	0.016	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Lead	0.0946		0.080	0.0080	mg/Kg		06/16/22 13:28	06/28/22 05:55	1
Zinc	ND		2.0	1.0	mg/Kg		06/16/22 13:28	06/28/22 05:55	1

Lab Sample ID: LCS 580-393467/3-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	100	101		mg/Kg		101	75 - 125
Barium	100	115	J	mg/Kg		115	75 - 125
Cadmium	80.0	81.3		mg/Kg		102	75 - 125
Chromium	100	99.5		mg/Kg		99	75 - 125
Copper	100	104		mg/Kg		104	75 - 125
Iron	2500	2560		mg/Kg		102	75 - 125
Manganese	100	99.1		mg/Kg		99	75 - 125
Nickel	100	104		mg/Kg		104	75 - 125
Lead	100	101		mg/Kg		101	75 - 125
Zinc	100	102		mg/Kg		102	75 - 125

Lab Sample ID: LCSD 580-393467/4-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	100	102		mg/Kg		102	75 - 125	2	20
Barium	100	104	J	mg/Kg		104	75 - 125	10	20

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: LCSD 580-393467/4-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cadmium	80.0	82.4		mg/Kg		103	75 - 125	1	20
Chromium	100	102		mg/Kg		102	75 - 125	2	20
Copper	100	106		mg/Kg		106	75 - 125	1	20
Iron	2500	2560		mg/Kg		102	75 - 125	0	20
Manganese	100	101		mg/Kg		101	75 - 125	2	20
Nickel	100	105		mg/Kg		105	75 - 125	1	20
Lead	100	103		mg/Kg		103	75 - 125	2	20
Zinc	100	103		mg/Kg		103	75 - 125	0	20

Lab Sample ID: 580-112739-629 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: CBREF-C1

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.6	B	208	221		mg/Kg	✱	104	75 - 125		
Barium	230	B	208	430		mg/Kg	✱	98	75 - 125		
Cadmium	0.077	J B	166	175		mg/Kg	✱	105	75 - 125		
Chromium	50	B	208	259		mg/Kg	✱	100	75 - 125		
Copper	13	B	208	228		mg/Kg	✱	103	70 - 130		
Iron	22000	B	5200	26900	4	mg/Kg	✱	100	75 - 125		
Manganese	660	B	208	854		mg/Kg	✱	91	75 - 125		
Nickel	29	B	208	244		mg/Kg	✱	103	75 - 125		
Lead	21	B	208	234		mg/Kg	✱	102	75 - 125		
Zinc	48		208	264		mg/Kg	✱	103	65 - 135		

Lab Sample ID: 580-112739-629 MSD

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: CBREF-C1

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.6	B	205	206		mg/Kg	✱	98	75 - 125	7	20
Barium	230	B	205	392	J	mg/Kg	✱	81	75 - 125	9	20
Cadmium	0.077	J B	164	165		mg/Kg	✱	101	75 - 125	6	20
Chromium	50	B	205	245		mg/Kg	✱	95	75 - 125	6	20
Copper	13	B	205	217		mg/Kg	✱	100	70 - 130	5	20
Iron	22000	B	5110	26100	4	mg/Kg	✱	86	75 - 125	3	20
Manganese	660	B	205	817		mg/Kg	✱	75	75 - 125	4	20
Nickel	29	B	205	232		mg/Kg	✱	99	75 - 125	5	20
Lead	21	B	205	223		mg/Kg	✱	99	75 - 125	5	20
Zinc	48		205	249		mg/Kg	✱	98	65 - 135	5	20

Lab Sample ID: 580-112739-630 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-1B1Y

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	6.9	B	202	212		mg/Kg	✱	102	75 - 125		
Barium	14000	B	202	14300	4	mg/Kg	✱	4	75 - 125		
Cadmium	0.070	J B	162	166		mg/Kg	✱	103	75 - 125		

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-112739-630 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-1B1Y

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Chromium	43	B	202	242		mg/Kg	✖	99	75 - 125
Copper	12	B	202	220		mg/Kg	✖	103	70 - 130
Iron	20000	F1 B	5050	23400		mg/Kg	✖	75	75 - 125
Manganese	820	F1 B	202	948	4	mg/Kg	✖	66	75 - 125
Nickel	25	B	202	231		mg/Kg	✖	102	75 - 125
Lead	20	B	202	227		mg/Kg	✖	102	75 - 125
Zinc	47		202	247		mg/Kg	✖	99	65 - 135

Lab Sample ID: 580-112739-630 MSD

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-1B1Y

Prep Type: Total/NA

Prep Batch: 393467

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	6.9	B	214	221		mg/Kg	✖	100	75 - 125	4	20
Barium	14000	B	214	11800	4	mg/Kg	✖	-1182	75 - 125	19	20
Cadmium	0.070	J B	171	177		mg/Kg	✖	103	75 - 125	7	20
Chromium	43	B	214	252		mg/Kg	✖	98	75 - 125	4	20
Copper	12	B	214	230		mg/Kg	✖	102	70 - 130	5	20
Iron	20000	F1 B	5350	23500	F1	mg/Kg	✖	73	75 - 125	1	20
Manganese	820	F1 B	214	956	F1	mg/Kg	✖	66	75 - 125	1	20
Nickel	25	B	214	242		mg/Kg	✖	101	75 - 125	5	20
Lead	20	B	214	237		mg/Kg	✖	102	75 - 125	5	20
Zinc	47		214	259		mg/Kg	✖	99	65 - 135	5	20

Lab Sample ID: MB 580-393469/1-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.060	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Barium	0.191	J	20	0.040	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Cadmium	ND		0.10	0.0020	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Chromium	ND		0.20	0.20	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Copper	0.0479	J	0.10	0.012	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Iron	ND		20	4.0	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Manganese	0.0504	J	0.10	0.010	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Nickel	0.0366	J	0.40	0.016	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Lead	ND		0.080	0.0080	mg/Kg		06/17/22 10:46	06/28/22 06:00	1
Zinc	ND		2.0	1.0	mg/Kg		06/17/22 10:46	06/28/22 06:00	1

Lab Sample ID: MB 580-393469/2-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.20	0.060	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Barium	0.0854	J	20	0.040	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Cadmium	ND		0.10	0.0020	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Chromium	0.252		0.20	0.20	mg/Kg		06/17/22 10:46	06/28/22 06:04	1

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 580-393469/2-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 393469

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Copper	0.0808	J	0.10	0.012	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Iron	4.90	J	20	4.0	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Manganese	0.267		0.10	0.010	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Nickel	0.0551	J	0.40	0.016	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Lead	ND		0.080	0.0080	mg/Kg		06/17/22 10:46	06/28/22 06:04	1
Zinc	ND		2.0	1.0	mg/Kg		06/17/22 10:46	06/28/22 06:04	1

Lab Sample ID: LCS 580-393469/3-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	100	102		mg/Kg		102	75 - 125
Barium	100	107	J	mg/Kg		107	75 - 125
Cadmium	80.0	83.1		mg/Kg		104	75 - 125
Chromium	100	102		mg/Kg		102	75 - 125
Copper	100	107		mg/Kg		107	75 - 125
Iron	2500	2590		mg/Kg		104	75 - 125
Manganese	100	102		mg/Kg		102	75 - 125
Nickel	100	107		mg/Kg		107	75 - 125
Lead	100	105		mg/Kg		105	75 - 125
Zinc	100	105		mg/Kg		105	75 - 125

Lab Sample ID: LCSD 580-393469/4-A

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	100	96.6		mg/Kg		97	75 - 125	5	20
Barium	100	104	J	mg/Kg		104	75 - 125	3	20
Cadmium	80.0	77.9		mg/Kg		97	75 - 125	6	20
Chromium	100	96.5		mg/Kg		97	75 - 125	6	20
Copper	100	100		mg/Kg		100	75 - 125	6	20
Iron	2500	2440		mg/Kg		98	75 - 125	6	20
Manganese	100	95.9		mg/Kg		96	75 - 125	6	20
Nickel	100	100		mg/Kg		100	75 - 125	7	20
Lead	100	98.3		mg/Kg		98	75 - 125	6	20
Zinc	100	98.4		mg/Kg		98	75 - 125	7	20

Lab Sample ID: 580-112739-649 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	4.4		189	197		mg/Kg	⚡	102	75 - 125
Barium	720	F1 B	189	799	F1	mg/Kg	⚡	43	75 - 125
Cadmium	0.089	J	151	158		mg/Kg	⚡	104	75 - 125
Chromium	40	B	189	233		mg/Kg	⚡	102	75 - 125
Copper	11	B	189	209		mg/Kg	⚡	104	70 - 130

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-112739-649 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	18000	B	4730	22800		mg/Kg	✱	101	75 - 125
Manganese	620	B	189	816		mg/Kg	✱	102	75 - 125
Nickel	24	B	189	223		mg/Kg	✱	105	75 - 125
Lead	19		189	215		mg/Kg	✱	103	75 - 125
Zinc	39		189	233		mg/Kg	✱	103	65 - 135

Lab Sample ID: 580-112739-649 MSD

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	4.4		201	207		mg/Kg	✱	101	75 - 125	5	20
Barium	720	F1 B	201	826	F1	mg/Kg	✱	54	75 - 125	3	20
Cadmium	0.089	J	161	168		mg/Kg	✱	105	75 - 125	6	20
Chromium	40	B	201	242		mg/Kg	✱	100	75 - 125	4	20
Copper	11	B	201	220		mg/Kg	✱	103	70 - 130	5	20
Iron	18000	B	5030	23200		mg/Kg	✱	104	75 - 125	2	20
Manganese	620	B	201	824		mg/Kg	✱	100	75 - 125	1	20
Nickel	24	B	201	233		mg/Kg	✱	104	75 - 125	5	20
Lead	19		201	224		mg/Kg	✱	102	75 - 125	4	20
Zinc	39		201	243		mg/Kg	✱	102	65 - 135	4	20

Lab Sample ID: 580-112739-650 MS

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D3

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	5.8		189	202		mg/Kg	✱	104	75 - 125
Barium	1400	B	189	1640	4	mg/Kg	✱	142	75 - 125
Cadmium	0.065	J	151	163		mg/Kg	✱	108	75 - 125
Chromium	44	B	189	240		mg/Kg	✱	104	75 - 125
Copper	12	B	189	212		mg/Kg	✱	106	70 - 130
Iron	20000	F1 B	4720	26100	4	mg/Kg	✱	139	75 - 125
Manganese	770	F1 B	189	986	4	mg/Kg	✱	116	75 - 125
Nickel	26	B	189	227		mg/Kg	✱	106	75 - 125
Lead	21		189	217		mg/Kg	✱	104	75 - 125
Zinc	43		189	242		mg/Kg	✱	105	65 - 135

Lab Sample ID: 580-112739-650 MSD

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D3

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	5.8		209	231		mg/Kg	✱	108	75 - 125	14	20
Barium	1400	B	209	1810	4	mg/Kg	✱	206	75 - 125	9	20
Cadmium	0.065	J	167	182		mg/Kg	✱	109	75 - 125	11	20
Chromium	44	B	209	272		mg/Kg	✱	109	75 - 125	12	20
Copper	12	B	209	244		mg/Kg	✱	111	70 - 130	14	20
Iron	20000	F1 B	5220	28300	F1	mg/Kg	✱	167	75 - 125	8	20

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1638 - Metals (ICP/MS) (Continued)

Lab Sample ID: 580-112739-650 MSD

Matrix: Solid

Analysis Batch: 395356

Client Sample ID: WPWB-3D3

Prep Type: Total/NA

Prep Batch: 393469

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Manganese	770	F1 B	209	1100	F1	mg/Kg	✖	162	75 - 125	11	20
Nickel	26	B	209	261		mg/Kg	✖	112	75 - 125	14	20
Lead	21		209	250		mg/Kg	✖	110	75 - 125	14	20
Zinc	43		209	276		mg/Kg	✖	112	65 - 135	13	20

Method: 1640 - Metals (ICPMS)

Lab Sample ID: MB 580-389186/1-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389186

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 02:44	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 02:44	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 02:44	1
Copper	ND		0.10	0.020	ug/L		05/02/22 17:16	05/04/22 02:44	1
Lead	0.00420	J	0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 02:44	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:16	05/04/22 02:44	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:16	05/04/22 02:44	1
Barium	ND		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 02:44	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 02:44	1
Manganese	ND		0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 02:44	1

Lab Sample ID: MB 580-389186/2-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389186

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:16	05/04/22 02:58	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:16	05/04/22 02:58	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:16	05/04/22 02:58	1
Copper	ND		0.10	0.020	ug/L		05/02/22 17:16	05/04/22 02:58	1
Lead	ND		0.025	0.0040	ug/L		05/02/22 17:16	05/04/22 02:58	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:16	05/04/22 02:58	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:16	05/04/22 02:58	1
Barium	ND		0.20	0.13	ug/L		05/02/22 17:16	05/04/22 02:58	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:16	05/04/22 02:58	1
Manganese	ND		0.050	0.0080	ug/L		05/02/22 17:16	05/04/22 02:58	1

Lab Sample ID: LCS 580-389186/3-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389186

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	12.5	12.9		ug/L		103	70 - 130
Cadmium	1.25	1.24		ug/L		99	70 - 130
Chromium	12.5	12.8		ug/L		102	70 - 130
Copper	12.5	12.9		ug/L		103	70 - 130
Lead	2.50	2.44		ug/L		98	70 - 130
Nickel	12.5	13.0		ug/L		104	70 - 130

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1640 - Metals (ICPMS) (Continued)

Lab Sample ID: LCS 580-389186/3-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389186

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Zinc	12.5	13.0		ug/L		104	70 - 130
Barium	12.5	12.4		ug/L		99	70 - 130
Iron	62.6	63.4		ug/L		101	70 - 130
Manganese	12.5	12.9		ug/L		103	70 - 130

Lab Sample ID: LCSD 580-389186/4-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 389186

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	12.5	12.6		ug/L		101	70 - 130	2	20
Cadmium	1.25	1.22		ug/L		98	70 - 130	1	20
Chromium	12.5	12.6		ug/L		100	70 - 130	2	20
Copper	12.5	12.7		ug/L		101	70 - 130	2	20
Lead	2.50	2.53		ug/L		101	70 - 130	4	20
Nickel	12.5	12.6		ug/L		101	70 - 130	3	20
Zinc	12.5	12.7		ug/L		102	70 - 130	2	20
Barium	12.5	12.2		ug/L		98	70 - 130	2	20
Iron	62.6	64.6		ug/L		103	70 - 130	2	20
Manganese	12.5	12.7		ug/L		102	70 - 130	1	20

Lab Sample ID: MB 580-389187/1-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389187

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 03:12	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 03:12	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 03:12	1
Copper	ND		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 03:12	1
Lead	ND		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 03:12	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:22	05/04/22 03:12	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 03:12	1
Barium	ND		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 03:12	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 03:12	1
Manganese	ND		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 03:12	1

Lab Sample ID: MB 580-389187/2-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389187

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.60	0.42	ug/L		05/02/22 17:22	05/04/22 03:27	1
Cadmium	ND		0.040	0.011	ug/L		05/02/22 17:22	05/04/22 03:27	1
Chromium	ND		0.50	0.34	ug/L		05/02/22 17:22	05/04/22 03:27	1
Copper	ND		0.10	0.020	ug/L		05/02/22 17:22	05/04/22 03:27	1
Lead	ND		0.025	0.0040	ug/L		05/02/22 17:22	05/04/22 03:27	1
Nickel	ND		0.30	0.11	ug/L		05/02/22 17:22	05/04/22 03:27	1
Zinc	ND		0.50	0.070	ug/L		05/02/22 17:22	05/04/22 03:27	1

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QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1640 - Metals (ICPMS) (Continued)

Lab Sample ID: MB 580-389187/2-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 389187

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Barium	ND		0.20	0.13	ug/L		05/02/22 17:22	05/04/22 03:27	1
Iron	ND		5.0	1.1	ug/L		05/02/22 17:22	05/04/22 03:27	1
Manganese	ND		0.050	0.0080	ug/L		05/02/22 17:22	05/04/22 03:27	1

Lab Sample ID: LCS 580-389187/3-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	12.5	12.8		ug/L		103	70 - 130
Cadmium	1.25	1.24		ug/L		99	70 - 130
Chromium	12.5	12.4		ug/L		99	70 - 130
Copper	12.5	13.1		ug/L		104	70 - 130
Lead	2.50	2.54		ug/L		102	70 - 130
Nickel	12.5	13.1		ug/L		105	70 - 130
Zinc	12.5	13.1		ug/L		105	70 - 130
Barium	12.5	12.3		ug/L		98	70 - 130
Iron	62.6	66.3		ug/L		106	70 - 130
Manganese	12.5	13.0		ug/L		104	70 - 130

Lab Sample ID: LCSD 580-389187/4-A

Matrix: Water

Analysis Batch: 390956

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	12.5	12.9		ug/L		103	70 - 130	0	20
Cadmium	1.25	1.24		ug/L		99	70 - 130	1	20
Chromium	12.5	12.6		ug/L		100	70 - 130	1	20
Copper	12.5	13.3		ug/L		106	70 - 130	1	20
Lead	2.50	2.61		ug/L		104	70 - 130	3	20
Nickel	12.5	13.4		ug/L		107	70 - 130	2	20
Zinc	12.5	13.4		ug/L		107	70 - 130	2	20
Barium	12.5	12.1		ug/L		97	70 - 130	1	20
Iron	62.6	67.8		ug/L		108	70 - 130	2	20
Manganese	12.5	13.2		ug/L		106	70 - 130	2	20

Lab Sample ID: 580-112739-662 MS

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-1B2Y-SW-B

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.7		12.5	17.7		ug/L		127	50 - 150
Cadmium	0.011	J	1.25	1.22		ug/L		97	50 - 150
Chromium	0.43	J	12.5	14.8		ug/L		115	50 - 150
Copper	0.96		12.5	14.8		ug/L		111	50 - 150
Lead	0.083		2.50	2.54		ug/L		98	50 - 150
Nickel	0.22	J	12.5	14.0		ug/L		110	50 - 150
Zinc	0.49	J	12.5	13.8		ug/L		107	50 - 150
Barium	8.9		12.5	22.3		ug/L		107	50 - 150

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1640 - Metals (ICPMS) (Continued)

Lab Sample ID: 580-112739-662 MS

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-1B2Y-SW-B

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Iron	20		62.6	89.4		ug/L		110	50 - 150
Manganese	1.2		12.5	12.3		ug/L		89	50 - 150

Lab Sample ID: 580-112739-662 MSD

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-1B2Y-SW-B

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.7		12.5	17.4		ug/L		126	50 - 150	1	20
Cadmium	0.011	J	1.25	1.23		ug/L		98	50 - 150	1	20
Chromium	0.43	J	12.5	14.8		ug/L		114	50 - 150	0	20
Copper	0.96		12.5	14.6		ug/L		109	50 - 150	1	20
Lead	0.083		2.50	2.59		ug/L		100	50 - 150	2	20
Nickel	0.22	J	12.5	13.7		ug/L		108	50 - 150	2	20
Zinc	0.49	J	12.5	13.6		ug/L		105	50 - 150	1	20
Barium	8.9		12.5	22.7		ug/L		111	50 - 150	2	20
Iron	20		62.6	87.2		ug/L		107	50 - 150	3	20
Manganese	1.2		12.5	12.0		ug/L		86	50 - 150	3	20

Lab Sample ID: 580-112739-663 MS

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-3B2X-SW-1

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Arsenic	1.6		12.5	17.7		ug/L		129	50 - 150
Cadmium	ND		1.25	1.20		ug/L		95	50 - 150
Chromium	ND		12.5	14.8		ug/L		118	50 - 150
Copper	0.21		12.5	14.0		ug/L		110	50 - 150
Lead	0.22		2.50	2.73		ug/L		100	50 - 150
Nickel	0.21	J	12.5	13.6		ug/L		108	50 - 150
Zinc	0.25	J	12.5	13.3		ug/L		104	50 - 150
Barium	8.1		12.5	21.6		ug/L		108	50 - 150
Iron	2.8	J	62.6	69.7		ug/L		107	50 - 150
Manganese	0.37		12.5	10.5		ug/L		81	50 - 150

Lab Sample ID: 580-112739-663 MSD

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-3B2X-SW-1

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic	1.6		12.5	17.9		ug/L		131	50 - 150	1	20
Cadmium	ND		1.25	1.23		ug/L		98	50 - 150	3	20
Chromium	ND		12.5	14.6		ug/L		116	50 - 150	1	20
Copper	0.21		12.5	14.3		ug/L		112	50 - 150	2	20
Lead	0.22		2.50	2.78		ug/L		103	50 - 150	2	20
Nickel	0.21	J	12.5	14.0		ug/L		110	50 - 150	3	20
Zinc	0.25	J	12.5	13.5		ug/L		105	50 - 150	1	20
Barium	8.1		12.5	21.3		ug/L		106	50 - 150	1	20
Iron	2.8	J	62.6	72.7		ug/L		112	50 - 150	4	20

Eurofins Seattle

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Method: 1640 - Metals (ICPMS) (Continued)

Lab Sample ID: 580-112739-663 MSD

Matrix: Water

Analysis Batch: 390956

Client Sample ID: WPWB-3B2X-SW-1

Prep Type: Total/NA

Prep Batch: 389187

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Manganese	0.37		12.5	10.9		ug/L		85	50 - 150	4	20

Method: Moisture - 2540 - Percent Moisture

Lab Sample ID: 580-112739-629 DU

Matrix: Solid

Analysis Batch: 393105

Client Sample ID: CBREF-C1

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	53	H H3	55		%		5	20
Percent Solids	47	H H3	45		%		6	20

Lab Sample ID: 580-112739-630 DU

Matrix: Solid

Analysis Batch: 393105

Client Sample ID: WPWB-1B1Y

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	54	H H3	57		%		6	20
Percent Solids	46	H H3	43		%		7	20

Lab Sample ID: 580-112739-649 DU

Matrix: Solid

Analysis Batch: 393115

Client Sample ID: WPWB-3D2

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	51	H H3	51		%		1	20
Percent Solids	49	H H3	49		%		1	20

Lab Sample ID: 580-112739-650 DU

Matrix: Solid

Analysis Batch: 393115

Client Sample ID: WPWB-3D3

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	53	H H3	52		%		2	20
Percent Solids	47	H H3	48		%		2	20

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-A1

Lab Sample ID: 580-112739-627

Date Collected: 03/24/22 19:25

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	392856	06/05/22 16:39	D1C	FGS SEA

Client Sample ID: CBREF-A1

Lab Sample ID: 580-112739-627

Date Collected: 03/24/22 19:25

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 50.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393094	06/07/22 16:49	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:30	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393450	06/16/22 11:41	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 09:42	AJR	FGS SEA

Client Sample ID: CBREF-B1

Lab Sample ID: 580-112739-628

Date Collected: 03/24/22 19:37

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	392856	06/05/22 16:39	D1C	FGS SEA

Client Sample ID: CBREF-B1

Lab Sample ID: 580-112739-628

Date Collected: 03/24/22 19:37

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395046	06/24/22 15:46	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393450	06/16/22 11:41	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 09:47	AJR	FGS SEA

Client Sample ID: CBREF-C1

Lab Sample ID: 580-112739-629

Date Collected: 03/24/22 19:53

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: CBREF-C1

Lab Sample ID: 580-112739-629

Date Collected: 03/24/22 19:53

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395046	06/24/22 15:50	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 07:11	AJR	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B1Y

Lab Sample ID: 580-112739-630

Date Collected: 03/24/22 11:24

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1B1Y

Lab Sample ID: 580-112739-630

Date Collected: 03/24/22 11:24

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:35	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 07:34	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y

Lab Sample ID: 580-112739-631

Date Collected: 03/24/22 08:45

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1B2Y

Lab Sample ID: 580-112739-631

Date Collected: 03/24/22 08:45

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		200	395046	06/24/22 18:11	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 09:51	AJR	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		10	395356	06/28/22 15:03	AJR	FGS SEA

Client Sample ID: WPWB-1B3X

Lab Sample ID: 580-112739-632

Date Collected: 03/24/22 09:02

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1B3X

Lab Sample ID: 580-112739-632

Date Collected: 03/24/22 09:02

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:39	COW	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B3X

Lab Sample ID: 580-112739-632

Date Collected: 03/24/22 09:02

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 09:56	AJR	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		10	395356	06/28/22 15:08	AJR	FGS SEA

Client Sample ID: WPWB-1C1

Lab Sample ID: 580-112739-633

Date Collected: 03/24/22 12:25

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1C1

Lab Sample ID: 580-112739-633

Date Collected: 03/24/22 12:25

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:43	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:09	AJR	FGS SEA

Client Sample ID: WPWB-1C1-FD

Lab Sample ID: 580-112739-634

Date Collected: 03/24/22 12:33

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1C1-FD

Lab Sample ID: 580-112739-634

Date Collected: 03/24/22 12:33

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:47	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:13	AJR	FGS SEA

Client Sample ID: WPWB-1C2

Lab Sample ID: 580-112739-635

Date Collected: 03/24/22 12:47

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1C2

Lab Sample ID: 580-112739-635

Date Collected: 03/24/22 12:47

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:51	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:18	AJR	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		10	395356	06/28/22 15:12	AJR	FGS SEA

Client Sample ID: WPWB-1C3

Lab Sample ID: 580-112739-636

Date Collected: 03/24/22 13:03

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1C3

Lab Sample ID: 580-112739-636

Date Collected: 03/24/22 13:03

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 16:55	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:22	AJR	FGS SEA

Client Sample ID: WPWB-1D1

Lab Sample ID: 580-112739-637

Date Collected: 03/24/22 13:59

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1D1

Lab Sample ID: 580-112739-637

Date Collected: 03/24/22 13:59

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:00	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:27	AJR	FGS SEA

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1D2

Lab Sample ID: 580-112739-638

Date Collected: 03/24/22 13:41

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1D2

Lab Sample ID: 580-112739-638

Date Collected: 03/24/22 13:41

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.9

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:04	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:31	AJR	FGS SEA

Client Sample ID: WPWB-1D3

Lab Sample ID: 580-112739-639

Date Collected: 03/24/22 13:24

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-1D3

Lab Sample ID: 580-112739-639

Date Collected: 03/24/22 13:24

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.4

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:16	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:35	AJR	FGS SEA

Client Sample ID: WPWB-2B1X

Lab Sample ID: 580-112739-640

Date Collected: 03/24/22 09:45

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-2B1X

Lab Sample ID: 580-112739-640

Date Collected: 03/24/22 09:45

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 43.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:21	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:40	AJR	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-2C2

Lab Sample ID: 580-112739-641

Date Collected: 03/24/22 10:00

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-2C2

Lab Sample ID: 580-112739-641

Date Collected: 03/24/22 10:00

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:25	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:44	AJR	FGS SEA

Client Sample ID: WPWB-3B1X

Lab Sample ID: 580-112739-642

Date Collected: 03/24/22 11:06

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3B1X

Lab Sample ID: 580-112739-642

Date Collected: 03/24/22 11:06

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 47.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:29	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 10:49	AJR	FGS SEA

Client Sample ID: WPWB-3B2X

Lab Sample ID: 580-112739-643

Date Collected: 03/24/22 05:32

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3B2X

Lab Sample ID: 580-112739-643

Date Collected: 03/24/22 05:32

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:33	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:02	AJR	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X

Lab Sample ID: 580-112739-643

Date Collected: 03/24/22 05:32

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		10	395356	06/28/22 15:21	AJR	FGS SEA

Client Sample ID: WPWB-3B3X

Lab Sample ID: 580-112739-644

Date Collected: 03/24/22 05:48

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3B3X

Lab Sample ID: 580-112739-644

Date Collected: 03/24/22 05:48

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 45.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:37	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:06	AJR	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 15:26	AJR	FGS SEA

Client Sample ID: WPWB-3C1

Lab Sample ID: 580-112739-645

Date Collected: 03/24/22 02:04

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3C1

Lab Sample ID: 580-112739-645

Date Collected: 03/24/22 02:04

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:42	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:11	AJR	FGS SEA

Client Sample ID: WPWB-3C2

Lab Sample ID: 580-112739-646

Date Collected: 03/24/22 02:21

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3C2

Lab Sample ID: 580-112739-646

Date Collected: 03/24/22 02:21

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:46	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:15	AJR	FGS SEA

Client Sample ID: WPWB-3C3

Lab Sample ID: 580-112739-647

Date Collected: 03/24/22 02:39

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3C3

Lab Sample ID: 580-112739-647

Date Collected: 03/24/22 02:39

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 48.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393145	06/08/22 12:59	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:50	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:20	AJR	FGS SEA

Client Sample ID: WPWB-3D1

Lab Sample ID: 580-112739-648

Date Collected: 03/24/22 01:42

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393105	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3D1

Lab Sample ID: 580-112739-648

Date Collected: 03/24/22 01:42

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 50.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395181	06/27/22 16:21	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393467	06/16/22 13:28	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:24	AJR	FGS SEA

Client Sample ID: WPWB-3D2

Lab Sample ID: 580-112739-649

Date Collected: 03/24/22 01:20

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393115	06/08/22 09:13	D1C	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3D2

Lab Sample ID: 580-112739-649

Date Collected: 03/24/22 01:20

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395181	06/27/22 16:25	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393469	06/17/22 10:46	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 07:47	AJR	FGS SEA

Client Sample ID: WPWB-3D3

Lab Sample ID: 580-112739-650

Date Collected: 03/24/22 00:56

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393115	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-3D3

Lab Sample ID: 580-112739-650

Date Collected: 03/24/22 00:56

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 46.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		50	395181	06/27/22 16:46	V1R	FGS SEA
Total/NA	Prep	HF Bomb Prep			393469	06/17/22 10:46	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 08:00	AJR	FGS SEA

Client Sample ID: WPWB-4B1X

Lab Sample ID: 580-112739-651

Date Collected: 03/24/22 03:51

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393115	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-4B1X

Lab Sample ID: 580-112739-651

Date Collected: 03/24/22 03:51

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 17:54	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393469	06/17/22 10:46	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:28	AJR	FGS SEA

Client Sample ID: WPWB-4C2

Lab Sample ID: 580-112739-652

Date Collected: 03/24/22 02:57

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393115	06/08/22 09:13	D1C	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-4C2

Lab Sample ID: 580-112739-652

Date Collected: 03/24/22 02:57

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		50	395885	07/01/22 18:07	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393469	06/17/22 10:46	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:33	AJR	FGS SEA

Client Sample ID: WPWB-4C2-FD

Lab Sample ID: 580-112739-653

Date Collected: 03/24/22 03:06

Matrix: Solid

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	Moisture - 2540		1	393115	06/08/22 09:13	D1C	FGS SEA

Client Sample ID: WPWB-4C2-FD

Lab Sample ID: 580-112739-653

Date Collected: 03/24/22 03:06

Matrix: Solid

Date Received: 04/18/22 12:35

Percent Solids: 49.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1631B CAR Prep			393162	06/08/22 13:04	D1C	FGS SEA
Total/NA	Analysis	1631B		20	395885	07/01/22 18:11	COW	FGS SEA
Total/NA	Prep	HF Bomb Prep			393469	06/17/22 10:46	M1R	FGS SEA
Total/NA	Analysis	1638		1	395356	06/28/22 11:37	AJR	FGS SEA

Client Sample ID: CBREF-SW-1

Lab Sample ID: 580-112739-654

Date Collected: 03/24/22 17:08

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 13:22	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 17:00	AJR	FGS SEA

Client Sample ID: CBREF-SW-20

Lab Sample ID: 580-112739-655

Date Collected: 03/24/22 17:17

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 14:37	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 17:14	AJR	FGS SEA

Client Sample ID: CBREF-SW-40

Lab Sample ID: 580-112739-656

Date Collected: 03/24/22 17:29

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 14:42	V1R	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: CBREF-SW-40

Lab Sample ID: 580-112739-656

Date Collected: 03/24/22 17:29

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 17:28	AJR	FGS SEA

Client Sample ID: CBREF-SW-B

Lab Sample ID: 580-112739-657

Date Collected: 03/24/22 17:40

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:11	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 17:43	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y-SW-1

Lab Sample ID: 580-112739-658

Date Collected: 03/24/22 07:16

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:15	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 17:57	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y-SW-1-FD

Lab Sample ID: 580-112739-659

Date Collected: 03/24/22 07:23

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:19	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 18:11	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y-SW-20

Lab Sample ID: 580-112739-660

Date Collected: 03/24/22 07:29

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:23	V1R	FGS SEA
Total/NA	Prep	1640			389186	05/02/22 17:16	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 15:34	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y-SW-40

Lab Sample ID: 580-112739-661

Date Collected: 03/24/22 07:39

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:28	V1R	FGS SEA

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Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-1B2Y-SW-40

Lab Sample ID: 580-112739-661

Date Collected: 03/24/22 07:39

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1640			389186	05/02/22 17:16	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 15:49	AJR	FGS SEA

Client Sample ID: WPWB-1B2Y-SW-B

Lab Sample ID: 580-112739-662

Date Collected: 03/24/22 07:52

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:32	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 07:29	AJR	FGS SEA

Client Sample ID: WPWB-3B2X-SW-1

Lab Sample ID: 580-112739-663

Date Collected: 03/24/22 04:19

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:44	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 08:40	AJR	FGS SEA

Client Sample ID: WPWB-3B2X-SW-20

Lab Sample ID: 580-112739-664

Date Collected: 03/24/22 04:27

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394549	06/21/22 15:49	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 16:03	AJR	FGS SEA

Client Sample ID: WPWB-3B2X-SW-40

Lab Sample ID: 580-112739-665

Date Collected: 03/24/22 04:37

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394705	06/22/22 18:18	V1R	FGS SEA
Total/NA	Prep	1640			389187	05/02/22 17:22	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 16:17	AJR	FGS SEA

Client Sample ID: WPWB-3B2X-SW-B

Lab Sample ID: 580-112739-666

Date Collected: 03/24/22 04:50

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394705	06/22/22 18:26	V1R	FGS SEA

Eurofins Seattle

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Client Sample ID: WPWB-3B2X-SW-B

Lab Sample ID: 580-112739-666

Date Collected: 03/24/22 04:50

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	1640			389186	05/02/22 17:16	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 14:08	AJR	FGS SEA

Client Sample ID: WPWB-EQ

Lab Sample ID: 580-112739-667

Date Collected: 03/24/22 00:35

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394705	06/22/22 18:22	V1R	FGS SEA
Total/NA	Prep	1640			389186	05/02/22 17:16	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 14:23	AJR	FGS SEA

Client Sample ID: WPWB-WB

Lab Sample ID: 580-112739-668

Date Collected: 03/24/22 00:32

Matrix: Water

Date Received: 04/18/22 12:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	1631E		1	394705	06/22/22 18:30	V1R	FGS SEA
Total/NA	Prep	1640			389186	05/02/22 17:16	AJR	FGS SEA
Total/NA	Analysis	1640		1	390956	05/04/22 14:37	AJR	FGS SEA

Laboratory References:

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-004	02-19-25

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids

ANAB	Dept. of Defense ELAP	L2236	01-19-25
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
ANAB	Dept. of Energy	L2236	01-19-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
ANAB	ISO/IEC 17025	L2236	01-19-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
California	State	2954	07-07-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Florida	NELAP	E87575	06-30-23

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Manganese

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Barium
1640	1640	Water	Chromium
1640	1640	Water	Iron
1640	1640	Water	Manganese
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Louisiana	NELAP	03073	06-30-23
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Barium
1640	1640	Water	Iron
1640	1640	Water	Manganese
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Maine	State	WA01273	05-02-24
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Montana (UST)	State	NA	04-14-27

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1631E		Water	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
New Jersey	NELAP	WA014	06-30-23
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
New York	NELAP	11662	04-01-23
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Oregon	NELAP	4167	07-07-22
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Barium
1640	1640	Water	Iron
1640	1640	Water	Manganese
Moisture - 2540		Solid	Percent Solids
US Fish & Wildlife	US Federal Programs	058448	05-31-22 *
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1631E		Water	Mercury

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins Seattle

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc

USDA	US Federal Programs	P330-20-00031	02-10-23
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1631E		Water	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids

Washington	State	C788	07-13-22
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The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
1631B	1631B CAR Prep	Solid	Mercury
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium

Eurofins Seattle

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Laboratory: Eurofins Seattle (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids
Wisconsin	State	399133460	08-31-22
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
1638	HF Bomb Prep	Solid	Arsenic
1638	HF Bomb Prep	Solid	Barium
1638	HF Bomb Prep	Solid	Cadmium
1638	HF Bomb Prep	Solid	Chromium
1638	HF Bomb Prep	Solid	Copper
1638	HF Bomb Prep	Solid	Iron
1638	HF Bomb Prep	Solid	Lead
1638	HF Bomb Prep	Solid	Manganese
1638	HF Bomb Prep	Solid	Nickel
1638	HF Bomb Prep	Solid	Zinc
1640	1640	Water	Arsenic
1640	1640	Water	Barium
1640	1640	Water	Cadmium
1640	1640	Water	Chromium
1640	1640	Water	Copper
1640	1640	Water	Iron
1640	1640	Water	Lead
1640	1640	Water	Manganese
1640	1640	Water	Nickel
1640	1640	Water	Zinc
Moisture - 2540		Solid	Percent Moisture
Moisture - 2540		Solid	Percent Solids

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: Project T423.11

Job ID: 580-112739-6

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-112739-627	CBREF-A1	Solid	03/24/22 19:25	04/18/22 12:35
580-112739-628	CBREF-B1	Solid	03/24/22 19:37	04/18/22 12:35
580-112739-629	CBREF-C1	Solid	03/24/22 19:53	04/18/22 12:35
580-112739-630	WPWB-1B1Y	Solid	03/24/22 11:24	04/18/22 12:35
580-112739-631	WPWB-1B2Y	Solid	03/24/22 08:45	04/18/22 12:35
580-112739-632	WPWB-1B3X	Solid	03/24/22 09:02	04/18/22 12:35
580-112739-633	WPWB-1C1	Solid	03/24/22 12:25	04/18/22 12:35
580-112739-634	WPWB-1C1-FD	Solid	03/24/22 12:33	04/18/22 12:35
580-112739-635	WPWB-1C2	Solid	03/24/22 12:47	04/18/22 12:35
580-112739-636	WPWB-1C3	Solid	03/24/22 13:03	04/18/22 12:35
580-112739-637	WPWB-1D1	Solid	03/24/22 13:59	04/18/22 12:35
580-112739-638	WPWB-1D2	Solid	03/24/22 13:41	04/18/22 12:35
580-112739-639	WPWB-1D3	Solid	03/24/22 13:24	04/18/22 12:35
580-112739-640	WPWB-2B1X	Solid	03/24/22 09:45	04/18/22 12:35
580-112739-641	WPWB-2C2	Solid	03/24/22 10:00	04/18/22 12:35
580-112739-642	WPWB-3B1X	Solid	03/24/22 11:06	04/18/22 12:35
580-112739-643	WPWB-3B2X	Solid	03/24/22 05:32	04/18/22 12:35
580-112739-644	WPWB-3B3X	Solid	03/24/22 05:48	04/18/22 12:35
580-112739-645	WPWB-3C1	Solid	03/24/22 02:04	04/18/22 12:35
580-112739-646	WPWB-3C2	Solid	03/24/22 02:21	04/18/22 12:35
580-112739-647	WPWB-3C3	Solid	03/24/22 02:39	04/18/22 12:35
580-112739-648	WPWB-3D1	Solid	03/24/22 01:42	04/18/22 12:35
580-112739-649	WPWB-3D2	Solid	03/24/22 01:20	04/18/22 12:35
580-112739-650	WPWB-3D3	Solid	03/24/22 00:56	04/18/22 12:35
580-112739-651	WPWB-4B1X	Solid	03/24/22 03:51	04/18/22 12:35
580-112739-652	WPWB-4C2	Solid	03/24/22 02:57	04/18/22 12:35
580-112739-653	WPWB-4C2-FD	Solid	03/24/22 03:06	04/18/22 12:35
580-112739-654	CBREF-SW-1	Water	03/24/22 17:08	04/18/22 12:35
580-112739-655	CBREF-SW-20	Water	03/24/22 17:17	04/18/22 12:35
580-112739-656	CBREF-SW-40	Water	03/24/22 17:29	04/18/22 12:35
580-112739-657	CBREF-SW-B	Water	03/24/22 17:40	04/18/22 12:35
580-112739-658	WPWB-1B2Y-SW-1	Water	03/24/22 07:16	04/18/22 12:35
580-112739-659	WPWB-1B2Y-SW-1-FD	Water	03/24/22 07:23	04/18/22 12:35
580-112739-660	WPWB-1B2Y-SW-20	Water	03/24/22 07:29	04/18/22 12:35
580-112739-661	WPWB-1B2Y-SW-40	Water	03/24/22 07:39	04/18/22 12:35
580-112739-662	WPWB-1B2Y-SW-B	Water	03/24/22 07:52	04/18/22 12:35
580-112739-663	WPWB-3B2X-SW-1	Water	03/24/22 04:19	04/18/22 12:35
580-112739-664	WPWB-3B2X-SW-20	Water	03/24/22 04:27	04/18/22 12:35
580-112739-665	WPWB-3B2X-SW-40	Water	03/24/22 04:37	04/18/22 12:35
580-112739-666	WPWB-3B2X-SW-B	Water	03/24/22 04:50	04/18/22 12:35
580-112739-667	WPWB-EQ	Water	03/24/22 00:35	04/18/22 12:35
580-112739-668	WPWB-WB	Water	03/24/22 00:32	04/18/22 12:35

Ship to:
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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com

General Notes:
Please report results separately for each Project ID
Please report all results to the MDL. J-flag results between MDL and RL
Sediment results should be reprinted on a dry weight basis
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic Arsenic (EPA 1632)
T423.09	FUCPP-1B3X	3/19/2022	7:40	SED	FREEZE	1	1	1				
T423.09	FUCPP-1C1X	3/19/2022	5:43	SED	FREEZE	1	1	1				
T423.09	FUCPP-1C2	3/19/2022	5:24	SED	FREEZE	1	1	1				
T423.09	FUCPP-1C3	3/19/2022	3:45	SED	FREEZE	1	1	1				
T423.09	FUCPP-1D1	3/19/2022	7:01	SED	FREEZE	1	1	1				
T423.09	FUCPP-1D2	3/19/2022	17:18	SED	FREEZE	1	1	1				
T423.09	FUCPP-1D3	3/19/2022	3:06	SED	FREEZE	1	1	1				
T423.09	FUCPP-1E2	3/19/2022	2:42	SED	FREEZE	1	1	1				
T423.09	FUCPP-1F2	3/19/2022	2:22	SED	FREEZE	1	1	1				
T423.09	FUCPP-1G2	3/19/2022	2:01	SED	FREEZE	1	1	1				
T423.09	FUCPP-2C3X	3/18/2022	23:11	SED	FREEZE	1	1	1				
T423.09	FUCPP-2C3X-FD	3/18/2022	23:19	SED	FREEZE	1	1	1				
T423.09	FUCPP-2E2	3/19/2022	1:23	SED	FREEZE	1	1	1				
T423.09	FUCPP-2F2	3/19/2022	1:01	SED	FREEZE	1	1	1				
T423.09	FUCPP-2G2	3/19/2022	0:33	SED	FREEZE	1	1	1				
T423.09	FUCPP-3C1	3/18/2022	22:58	SED	FREEZE	1	1	1				
T423.09	FUCPP-3C2X	3/18/2022	22:45	SED	FREEZE	1	1	1				
T423.09	FUCPP-3D1	3/18/2022	19:57	SED	FREEZE	1	1	1				
T423.09	FUCPP-3D2	3/18/2022	20:15	SED	FREEZE	1	1	1				
T423.09	FUCPP-3D3	3/18/2022	20:34	SED	FREEZE	1	1	1				
T423.09	FUCPP-3E2	3/18/2022	19:40	SED	FREEZE	1	1	1				
T423.09	FUCPP-3F2	3/18/2022	19:24	SED	FREEZE	1	1	1				
T423.09	FUCPP-3G2	3/18/2022	19:07	SED	FREEZE	1	1	1				
T423.09	FUCPP-4B2X	3/19/2022	8:10	SED	FREEZE	1	1	1				
T423.09	FUCPP-4B3X	3/19/2022	7:37	SED	FREEZE	1	1	1				
T423.09	FUCPP-4E2	3/19/2022	8:40	SED	FREEZE	1	1	1				
T423.09	FUCPP-4F2	3/19/2022	8:51	SED	FREEZE	1	1	1				
T423.09	FUCPP-4G2	3/19/2022	9:08	SED	FREEZE	1	1	1				
T423.09	FUREF-A1	3/19/2022	12:26	SED	FREEZE	1	1	1				
T423.09	FUREF-B1	3/19/2022	12:39	SED	FREEZE	1	1	1				
T423.09	FUREF-C1	3/19/2022	12:52	SED	FREEZE	1	1	1				
T423.09	FUWE-1B2X	3/18/2022	17:34	SED	FREEZE	1	1	1				
T423.09	FUWE-2B2X	3/18/2022	17:17	SED	FREEZE	1	1	1				
T423.09	FUWE-3B1Y	3/18/2022	16:49	SED	FREEZE	1	1	1				
T423.09	FUWE-3B1Y-FD	3/18/2022	16:57	SED	FREEZE	1	1	1				
T423.09	FUWE-4B2X	3/18/2022	16:35	SED	FREEZE	1	1	1				



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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic arsenic (EPA 1632)
T423.09	FUCPP-1C2-SW-1	3/19/2022	4:01	SW	FREEZE				1			
T423.09	FUCPP-1C2-SW-20	3/19/2022	4:09	SW	FREEZE				1			
T423.09	FUCPP-1C2-SW-40	3/19/2022	4:21	SW	FREEZE				1			
T423.09	FUCPP-1C2-SW-B	3/19/2022	4:33	SW	FREEZE				1			
T423.09	FUCPP-1C2-SW-B-FD	3/19/2022	4:46	SW	FREEZE				1			
T423.09	FUCPP-3C2X-SW-1	3/18/2022	21:44	SW	FREEZE				1			
T423.09	FUCPP-3C2X-SW-20	3/18/2022	21:52	SW	FREEZE				1			
T423.09	FUCPP-3C2X-SW-40	3/18/2022	22:11	SW	FREEZE				1			
T423.09	FUCPP-EQ	3/18/2022	21:30	SW	FREEZE				1			
T423.09	FUCPP-WB	3/18/2022	21:25	SW	FREEZE				1			
T423.09	FUREF-SW-1	3/19/2022	9:18	SW	FREEZE				1			
T423.09	FUREF-SW-20	3/19/2022	10:24	SW	FREEZE				1			
T423.09	FUREF-SW-40	3/19/2022	10:33	SW	FREEZE				1			
T423.09	FUREF-SW-B	3/19/2022	10:45	SW	FREEZE				1			
T423.10	MGWA-1B2Y	3/18/2022	12:24	SED	FREEZE	1	1	1	1			
T423.10	MGWA-1C2	3/18/2022	5:14	SED	FREEZE	1	1	1	1			
T423.10	MGWA-1CP2	3/18/2022	4:34	SED	FREEZE	1	1	1	1			
T423.10	MGWA-1D2	3/18/2022	3:53	SED	FREEZE	1	1	1	1			
T423.10	MGWA-2B2X	3/18/2022	10:54	SED	FREEZE	1	1	1	1			
T423.10	MGWA-2B2X-FD	3/18/2022	11:18	SED	FREEZE	1	1	1	1			
T423.10	MGWA-2C2	3/18/2022	10:25	SED	FREEZE	1	1	1	1			
T423.10	MGWA-3B2X	3/17/2022	23:29	SED	FREEZE	1	1	1	1			
T423.10	MGWA-3C2	3/17/2022	22:59	SED	FREEZE	1	1	1	1			
T423.10	MGWA-3CP2	3/17/2022	22:25	SED	FREEZE	1	1	1	1			
T423.10	MGWA-3D2	3/17/2022	17:35	SED	FREEZE	1	1	1	1			
T423.10	MGWA-4B2X	3/18/2022	7:35	SED	FREEZE	1	1	1	1			
T423.10	MGWA-4C2	3/18/2022	7:06	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1C1	3/22/2022	4:05	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1C1-FD	3/22/2022	4:23	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1C2	3/22/2022	3:26	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1CP1	3/22/2022	4:55	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1CP2	3/22/2022	5:31	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1CP3X	3/22/2022	7:18	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1D2	3/22/2022	7:48	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1E2	3/22/2022	8:18	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1F2	3/22/2022	18:48	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-1G2	3/22/2022	9:47	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-2C1X	3/21/2022	23:11	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-2C2	3/21/2022	22:45	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3CP2	3/21/2022	22:11	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-2D2	3/21/2022	21:46	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3C1	3/21/2022	4:47	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3C2	3/21/2022	4:17	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3C3X	3/21/2022	5:29	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3CP1	3/21/2022	10:33	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3CP2	3/21/2022	3:22	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3CP3X	3/20/2022	22:25	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3D2	3/20/2022	21:34	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3E2	3/20/2022	20:57	SED	FREEZE	1	1	1	1			
T423.10	NPCPP-3F2X	3/20/2022	20:28	SED	FREEZE	1	1	1	1			

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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
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Lafayette, CA
ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic arsenic (EPA 1632)
T423 10	NPQPP-3G2	3/20/2022	20:02	SED	FREEZE	1	1	1				
T423 10	NPQPP-4C2	3/21/2022	11:03	SED	FREEZE	1	1	1				
T423 10	NPQPP-4CP2	3/21/2022	20:07	SED	FREEZE	1	1	1				
T423 10	NPQPP-4D2	3/21/2022	20:39	SED	FREEZE	1	1	1				
T423 10	NPREF-A1	3/23/2022	17:20	SED	FREEZE	1	1	1				
T423 10	NPREF-B1	3/23/2022	17:09	SED	FREEZE	1	1	1				
T423 10	NPREF-C1	3/23/2022	17:34	SED	FREEZE	1	1	1				
T423 10	NPWB-1C2	3/23/2022	4:37	SED	FREEZE	1	1	1				
T423 10	NPWB-1CP2	3/23/2022	5:07	SED	FREEZE	1	1	1				
T423 10	NPWB-1CP2-FD	3/23/2022	5:28	SED	FREEZE	1	1	1				
T423 10	NPWB-1D2	3/23/2022	10:18	SED	FREEZE	1	1	1				
T423 10	NPWB-2B3	3/22/2022	20:01	SED	FREEZE	1	1	1				
T423 10	NPWB-2C2X	3/22/2022	20:26	SED	FREEZE	1	1	1				
T423 10	NPWB-3B2	3/22/2022	19:38	SED	FREEZE	1	1	1				
T423 10	NPWB-3C2	3/22/2022	22:31	SED	FREEZE	1	1	1				
T423 10	NPWB-3CP2	3/22/2022	22:03	SED	FREEZE	1	1	1				
T423 10	NPWB-3D2	3/22/2022	21:35	SED	FREEZE	1	1	1				
T423 10	NPWB-4B3X	3/23/2022	4:03	SED	FREEZE	1	1	1				
T423 10	NPWB-4C2	3/23/2022	3:27	SED	FREEZE	1	1	1				
T423 10	NPWG-1B2X	3/20/2022	5:23	SED	FREEZE	1	1	1				
T423 10	NPWG-1C2	3/20/2022	6:07	SED	FREEZE	1	1	1				
T423 10	NPWG-1CP2	3/20/2022	15:13	SED	FREEZE	1	1	1				
T423 10	NPWG-1D2	3/20/2022	19:10	SED	FREEZE	1	1	1				
T423 10	NPWG-2B2X	3/20/2022	16:46	SED	FREEZE	1	1	1				
T423 10	NPWG-2B2X-FD	3/20/2022	17:06	SED	FREEZE	1	1	1				
T423 10	NPWG-2C2	3/20/2022	17:33	SED	FREEZE	1	1	1				
T423 10	NPWG-3B2X	3/20/2022	1:37	SED	FREEZE	1	1	1				
T423 10	NPWG-3C2	3/19/2022	23:09	SED	FREEZE	1	1	1				
T423 10	NPWG-3CP2	3/19/2022	22:41	SED	FREEZE	1	1	1				
T423 10	NPWG-3D2	3/19/2022	22:11	SED	FREEZE	1	1	1				
T423 10	NPWG-4B2X	3/20/2022	2:39	SED	FREEZE	1	1	1				
T423 10	NPWG-4C2	3/20/2022	3:12	SED	FREEZE	1	1	1				
T423 10	PACPP-1C1	3/14/2022	10:48	SED	FREEZE	1	1	1				
T423 10	PACPP-1C2X	3/14/2022	10:05	SED	FREEZE	1	1	1				
T423 10	PACPP-1C3X	3/12/2022	23:02	SED	FREEZE	1	1	1				
T423 10	PACPP-1CP1	3/14/2022	11:16	SED	FREEZE	1	1	1				
T423 10	PACPP-1CP2X	3/12/2022	21:51	SED	FREEZE	1	1	1				
T423 10	PACPP-1CP3	3/12/2022	22:29	SED	FREEZE	1	1	1				
T423 10	PACPP-1D2	3/12/2022	21:11	SED	FREEZE	1	1	1				
T423 10	PACPP-1E2	3/12/2022	20:05	SED	FREEZE	1	1	1				
T423 10	PACPP-1G2	3/12/2022	19:25	SED	FREEZE	1	1	1				
T423 10	PACPP-1G2	3/12/2022	18:42	SED	FREEZE	1	1	1				
T423 10	PACPP-2C2	3/14/2022	4:58	SED	FREEZE	1	1	1				
T423 10	PACPP-2CP2	3/14/2022	3:50	SED	FREEZE	1	1	1				
T423 10	PACPP-2D2	3/14/2022	9:15	SED	FREEZE	1	1	1				
T423 10	PACPP-3C1	3/14/2022	15:45	SED	FREEZE	1	1	1				
T423 10	PACPP-3C2Y	3/14/2022	2:36	SED	FREEZE	1	1	1				
T423 10	PACPP-3C3X	3/14/2022	19:52	SED	FREEZE	1	1	1				
T423 10	PACPP-3CP1X	3/13/2022	4:50	SED	FREEZE	1	1	1				

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Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic Arsenic (EPA 1632)
T423.10	PACPP-3CP2	3/13/2022	4:12	SED	FREEZE	1	1	1	1			
T423.10	PACPP-3CP3	3/13/2022	3:34	SED	FREEZE	1	1	1	1			
T423.10	PACPP-3D2X	3/13/2022	2:30	SED	FREEZE	1	1	1	1			
T423.10	PACPP-3E2X	3/13/2022	1:54	SED	FREEZE	1	1	1	1			
T423.10	PACPP-3F2X	3/13/2022	1:16	SED	FREEZE	1	1	1	1			
T423.10	PACPP-3G2	3/13/2022	0:40	SED	FREEZE	1	1	1	1			
T423.10	PACPP-4C2	3/13/2022	23:15	SED	FREEZE	1	1	1	1			
T423.10	PACPP-4CP2X	3/13/2022	20:23	SED	FREEZE	1	1	1	1			
T423.10	PACPP-4D2X	3/13/2022	19:40	SED	FREEZE	1	1	1	1			
T423.10	PAEF-A1	3/13/2022	11:17	SED	FREEZE	1	1	1	1			
T423.10	PAEF-B1	3/13/2022	13:48	SED	FREEZE	1	1	1	1			
T423.10	PAEF-C1	3/13/2022	13:59	SED	FREEZE	1	1	1	1			
T423.10	PAWB-1C2	3/14/2022	22:24	SED	FREEZE	1	1	1	1			
T423.10	PAWB-1CP2	3/14/2022	21:46	SED	FREEZE	1	1	1	1			
T423.10	PAWB-1D2	3/14/2022	21:03	SED	FREEZE	1	1	1	1			
T423.10	PAWB-2B1X	3/14/2022	22:55	SED	FREEZE	1	1	1	1			
T423.10	PAWB-2C2	3/16/2022	19:09	SED	FREEZE	1	1	1	1			
T423.10	PAWB-3B2	3/16/2022	20:14	SED	FREEZE	1	1	1	1			
T423.10	PAWB-3C2	3/16/2022	20:43	SED	FREEZE	1	1	1	1			
T423.10	PAWB-3CP2	3/15/2022	5:13	SED	FREEZE	1	1	1	1			
T423.10	PAWB-3CP2-FD	3/15/2022	5:41	SED	FREEZE	1	1	1	1			
T423.10	PAWB-3D2	3/16/2022	21:39	SED	FREEZE	1	1	1	1			
T423.10	PAWB-4B2X	3/16/2022	19:44	SED	FREEZE	1	1	1	1			
T423.10	PAWB-4C2	3/15/2022	2:39	SED	FREEZE	1	1	1	1			
T423.10	PAWE-1B1	3/16/2022	5:37	SED	FREEZE	1	1	1	1			
T423.10	PAWE-1C2	3/16/2022	5:00	SED	FREEZE	1	1	1	1			
T423.10	PAWE-1CP2	3/16/2022	4:22	SED	FREEZE	1	1	1	1			
T423.10	PAWE-1D2	3/16/2022	3:41	SED	FREEZE	1	1	1	1			
T423.10	PAWE-2B3	3/17/2022	4:55	SED	FREEZE	1	1	1	1			
T423.10	PAWE-2B3-FD	3/17/2022	5:16	SED	FREEZE	1	1	1	1			
T423.10	PAWE-2C2	3/17/2022	6:58	SED	FREEZE	1	1	1	1			
T423.10	PAWE-3B3	3/15/2022	23:19	SED	FREEZE	1	1	1	1			
T423.10	PAWE-3C2	3/15/2022	22:47	SED	FREEZE	1	1	1	1			
T423.10	PAWE-3CP2	3/15/2022	22:16	SED	FREEZE	1	1	1	1			
T423.10	PAWE-3D2	3/15/2022	21:35	SED	FREEZE	1	1	1	1			
T423.10	PAWE-4B2	3/17/2022	4:18	SED	FREEZE	1	1	1	1			
T423.10	PAWE-4C2	3/17/2022	3:39	SED	FREEZE	1	1	1	1			

Relinquished by: *AP*

Relinquished by:

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31 MAR 22

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Ship to:
Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic Arsenic (EPA 1632)
T423.10	MGWA-1B2Y-SW-1	3/18/2022	0:32	SW	FREEZE				1	1		
T423.10	MGWA-1B2Y-SW-20	3/18/2022	0:43	SW	FREEZE				1	1		
T423.10	MGWA-1B2Y-SW-40	3/18/2022	1:00	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-B	3/18/2022	1:14	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-1	3/18/2022	2:03	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-20	3/18/2022	2:10	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-40	3/18/2022	2:20	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-B	3/18/2022	2:31	SW	FREEZE				1	1		
T423.10	MGWA-1CP2-SW-B-FD	3/18/2022	2:44	SW	FREEZE				1	1		
T423.10	MGWA-3B2X-SW-1	3/17/2022	20:45	SW	FREEZE				1	1		
T423.10	MGWA-3B2X-SW-20	3/17/2022	20:53	SW	FREEZE				1	1		
T423.10	MGWA-3B2X-SW-40	3/17/2022	21:02	SW	FREEZE				1	1		
T423.10	MGWA-3B2X-SW-B	3/17/2022	21:13	SW	FREEZE				1	1		
T423.10	MGWA-3CP2-SW-1	3/17/2022	19:32	SW	FREEZE				1	1		
T423.10	MGWA-3CP2-SW-20	3/17/2022	19:39	SW	FREEZE				1	1		
T423.10	MGWA-3CP2-SW-40	3/17/2022	19:47	SW	FREEZE				1	1		
T423.10	MGWA-3CP2-SW-B	3/17/2022	20:00	SW	FREEZE				1	1		
T423.10	MGWA-EQ	3/17/2022	19:10	SW	FREEZE				1	1		
T423.10	MGWA-WB	3/17/2022	19:15	SW	FREEZE				1	1		
T423.10	NPCPP-1C2-SW-1	3/21/2022	16:57	SW	FREEZE				1	1		
T423.10	NPCPP-1C2-SW-20	3/21/2022	17:04	SW	FREEZE				1	1		
T423.10	NPCPP-1C2-SW-40	3/21/2022	17:12	SW	FREEZE				1	1		
T423.10	NPCPP-1C2-SW-B	3/21/2022	17:22	SW	FREEZE				1	1		
T423.10	NPCPP-1CP2-SW-1	3/21/2022	15:53	SW	FREEZE				1	1		
T423.10	NPCPP-1CP2-SW-20	3/21/2022	16:00	SW	FREEZE				1	1		
T423.10	NPCPP-1CP2-SW-40	3/21/2022	16:08	SW	FREEZE				1	1		
T423.10	NPCPP-1CP2-SW-B	3/21/2022	16:21	SW	FREEZE				1	1		
T423.10	NPCPP-2C2-SW-1	3/22/2022	0:31	SW	FREEZE				1	1		
T423.10	NPCPP-2C2-SW-20	3/22/2022	0:38	SW	FREEZE				1	1		
T423.10	NPCPP-2C2-SW-40	3/22/2022	0:49	SW	FREEZE				1	1		
T423.10	NPCPP-3C2-SW-1	3/22/2022	1:01	SW	FREEZE				1	1		
T423.10	NPCPP-3C2-SW-20	3/22/2022	1:52	SW	FREEZE				1	1		
T423.10	NPCPP-3C2-SW-40	3/22/2022	1:59	SW	FREEZE				1	1		
T423.10	NPCPP-3C2-SW-B	3/22/2022	2:03	SW	FREEZE				1	1		
T423.10	NPCPP-3CP2-SW-1	3/21/2022	2:20	SW	FREEZE				1	1		
T423.10	NPCPP-3CP2-SW-20	3/21/2022	2:07	SW	FREEZE				1	1		
T423.10	NPCPP-3CP2-SW-40	3/21/2022	2:15	SW	FREEZE				1	1		
T423.10	NPCPP-3CP2-SW-B	3/21/2022	2:24	SW	FREEZE				1	1		
T423.10	NPCPP-4C2-SW-1	3/21/2022	2:36	SW	FREEZE				1	1		
T423.10	NPCPP-4C2-SW-20	3/21/2022	19:26	SW	FREEZE				1	1		
T423.10	NPCPP-4C2-SW-40	3/21/2022	19:31	SW	FREEZE				1	1		
T423.10	NPCPP-4C2-SW-B	3/21/2022	19:40	SW	FREEZE				1	1		
T423.10	NPCPP-EQ	3/21/2022	19:50	SW	FREEZE				1	1		
T423.10	NPCPP-WB	3/21/2022	1:50	SW	FREEZE				1	1		
T423.10	NPCPP-WB	3/21/2022	1:45	SW	FREEZE				1	1		
T423.10	NPCPP-SW-1	3/23/2022	16:05	SW	FREEZE				1	1		
T423.10	NPCPP-SW-20	3/23/2022	16:11	SW	FREEZE				1	1		
T423.10	NPCPP-SW-40	3/23/2022	16:19	SW	FREEZE				1	1		
T423.10	NPCPP-SW-40-FD	3/23/2022	16:28	SW	FREEZE				1	1		
T423.10	NPCPP-SW-B	3/23/2022	16:37	SW	FREEZE				1	1		

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MR

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5/13/22
sdymcam

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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic Arsenic (EPA 1632)
T423.10	NPWB-1C2-SW-1	3/23/2022	1:45	SW	FREEZE				1	1	1	
T423.10	NPWB-1C2-SW-20	3/23/2022	1:52	SW	FREEZE				1	1	1	
T423.10	NPWB-1C2-SW-40	3/23/2022	2:01	SW	FREEZE				1	1	1	
T423.10	NPWB-1C2-SW-B	3/23/2022	2:17	SW	FREEZE				1	1	1	
T423.10	NPWB-1CP2-SW-1	3/23/2022	0:26	SW	FREEZE				1	1	1	
T423.10	NPWB-1CP2-SW-20	3/23/2022	0:33	SW	FREEZE				1	1	1	
T423.10	NPWB-1CP2-SW-40	3/23/2022	0:42	SW	FREEZE				1	1	1	
T423.10	NPWB-1CP2-SW-B	3/23/2022	0:54	SW	FREEZE				1	1	1	
T423.10	NPWB-3B2-SW-1	3/22/2022	18:45	SW	FREEZE				1	1	1	
T423.10	NPWB-3B2-SW-20	3/22/2022	18:51	SW	FREEZE				1	1	1	
T423.10	NPWB-3B2-SW-40	3/22/2022	18:59	SW	FREEZE				1	1	1	
T423.10	NPWB-3B2-SW-B	3/22/2022	19:09	SW	FREEZE				1	1	1	
T423.10	NPWB-3CP2-SW-1	3/22/2022	16:35	SW	FREEZE				1	1	1	
T423.10	NPWB-3CP2-SW-1-FD	3/22/2022	16:40	SW	FREEZE				1	1	1	
T423.10	NPWB-3CP2-SW-20	3/22/2022	16:45	SW	FREEZE				1	1	1	
T423.10	NPWB-3CP2-SW-40	3/22/2022	16:53	SW	FREEZE				1	1	1	
T423.10	NPWB-3CP2-SW-B	3/22/2022	17:03	SW	FREEZE				1	1	1	
T423.10	NPWB-EQ	3/22/2022	16:20	SW	FREEZE				1	1	1	
T423.10	NPWB-WB	3/22/2022	16:25	SW	FREEZE				1	1	1	
T423.10	NPWG-1B2X-SW-1	3/20/2022	4:17	SW	FREEZE				1	1	1	
T423.10	NPWG-1B2X-SW-20	3/20/2022	4:24	SW	FREEZE				1	1	1	
T423.10	NPWG-1B2X-SW-40	3/20/2022	4:33	SW	FREEZE				1	1	1	
T423.10	NPWG-1B2X-SW-B	3/20/2022	4:44	SW	FREEZE				1	1	1	
T423.10	NPWG-1CP2-SW-1	3/20/2022	14:08	SW	FREEZE				1	1	1	
T423.10	NPWG-1CP2-SW-20	3/20/2022	14:13	SW	FREEZE				1	1	1	
T423.10	NPWG-1CP2-SW-40	3/20/2022	14:21	SW	FREEZE				1	1	1	
T423.10	NPWG-1CP2-SW-40-FD	3/20/2022	14:30	SW	FREEZE				1	1	1	
T423.10	NPWG-1CP2-SW-B	3/20/2022	14:40	SW	FREEZE				1	1	1	
T423.10	NPWG-3B2X-SW-1	3/20/2022	0:31	SW	FREEZE				1	1	1	
T423.10	NPWG-3B2X-SW-1	3/20/2022	1:01	SW	FREEZE				1	1	1	
T423.10	NPWG-3B2X-SW-20	3/20/2022	0:41	SW	FREEZE				1	1	1	
T423.10	NPWG-3B2X-SW-40	3/20/2022	0:30	SW	FREEZE				1	1	1	
T423.10	NPWG-3CP2-SW-1	3/19/2022	19:47	SW	FREEZE				1	1	1	
T423.10	NPWG-3CP2-SW-20	3/19/2022	19:53	SW	FREEZE				1	1	1	
T423.10	NPWG-3CP2-SW-40	3/19/2022	20:01	SW	FREEZE				1	1	1	
T423.10	NPWG-3CP2-SW-B	3/19/2022	20:11	SW	FREEZE				1	1	1	
T423.10	NPWG-EQ	3/19/2022	19:03	SW	FREEZE				1	1	1	
T423.10	NPWG-WB	3/19/2022	19:18	SW	FREEZE				1	1	1	

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8.7.20
Stygodan

Ship to:
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Eurofins - Frontier Global Sci.
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Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
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Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com


Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic Arsenic (EPA 1632)
T423.10	PACPP-1C2X-SW-1	3/14/2022	13.13	SW	FREEZE				1	1	1	1
T423.10	PACPP-1C2X-SW-20	3/14/2022	13.21	SW	FREEZE				1	1	1	1
T423.10	PACPP-1C2X-SW-40	3/14/2022	13.30	SW	FREEZE				1	1	1	1
T423.10	PACPP-1C2X-SW-B	3/14/2022	13.41	SW	FREEZE				1	1	1	1
T423.10	PACPP-1CP2X-SW-1	3/14/2022	15.22	SW	FREEZE				1	1	1	1
T423.10	PACPP-1CP2X-SW-20	3/14/2022	15.29	SW	FREEZE				1	1	1	1
T423.10	PACPP-1CP2X-SW-40	3/14/2022	15.37	SW	FREEZE				1	1	1	1
T423.10	PACPP-1CP2X-SW-B	3/14/2022	15.48	SW	FREEZE				1	1	1	1
T423.10	PACPP-2C2-SW-1	3/14/2022	16.16	SW	FREEZE				1	1	1	1
T423.10	PACPP-2C2-SW-20	3/14/2022	16.23	SW	FREEZE				1	1	1	1
T423.10	PACPP-2C2-SW-40	3/14/2022	16.31	SW	FREEZE				1	1	1	1
T423.10	PACPP-2C2-SW-B	3/14/2022	16.42	SW	FREEZE				1	1	1	1
T423.10	PACPP-3C2Y-SW-1	3/14/2022	18.36	SW	FREEZE				1	1	1	1
T423.10	PACPP-3C2Y-SW-20	3/14/2022	18.44	SW	FREEZE				1	1	1	1
T423.10	PACPP-3C2Y-SW-40	3/14/2022	18.52	SW	FREEZE				1	1	1	1
T423.10	PACPP-3C2Y-SW-B	3/14/2022	19.04	SW	FREEZE				1	1	1	1
T423.10	PACPP-3CP2-SW-1	3/14/2022	0.41	SW	FREEZE				1	1	1	1
T423.10	PACPP-3CP2-SW-20	3/14/2022	0.49	SW	FREEZE				1	1	1	1
T423.10	PACPP-3CP2-SW-40	3/14/2022	1.17	SW	FREEZE				1	1	1	1
T423.10	PACPP-3CP2-SW-B	3/14/2022	1.29	SW	FREEZE				1	1	1	1
T423.10	PACPP-4C2-SW-1	3/13/2022	22.35	SW	FREEZE				1	1	1	1
T423.10	PACPP-4C2-SW-20	3/13/2022	22.44	SW	FREEZE				1	1	1	1
T423.10	PACPP-4C2-SW-40	3/13/2022	22.53	SW	FREEZE				1	1	1	1
T423.10	PACPP-4C2-SW-B	3/13/2022	23.04	SW	FREEZE				1	1	1	1
T423.10	PACPP-EQ	3/12/2022	10.10	SW	FREEZE				1	1	1	1
T423.10	PACPP-WB	3/12/2022	10.05	SW	FREEZE				1	1	1	1
T423.10	PADEF-SW-1	3/13/2022	7.38	SW	FREEZE				1	1	1	1
T423.10	PADEF-SW-20	3/13/2022	7.48	SW	FREEZE				1	1	1	1
T423.10	PADEF-SW-40	3/13/2022	7.57	SW	FREEZE				1	1	1	1
T423.10	PADEF-SW-B	3/13/2022	8.09	SW	FREEZE				1	1	1	1
T423.10	PAWB-1CP2-SW-1	3/15/2022	0.37	SW	FREEZE				1	1	1	1
T423.10	PAWB-1CP2-SW-20	3/15/2022	0.43	SW	FREEZE				1	1	1	1
T423.10	PAWB-1CP2-SW-40	3/15/2022	1.03	SW	FREEZE				1	1	1	1
T423.10	PAWB-1CP2-SW-B	3/15/2022	1.36	SW	FREEZE				1	1	1	1
T423.10	PAWB-3B2-SW-1	3/15/2022	19.16	SW	FREEZE				1	1	1	1
T423.10	PAWB-3B2-SW-1-FD	3/15/2022	19.22	SW	FREEZE				1	1	1	1
T423.10	PAWB-3B2-SW-20	3/15/2022	19.27	SW	FREEZE				1	1	1	1
T423.10	PAWB-3B2-SW-40	3/15/2022	19.37	SW	FREEZE				1	1	1	1
T423.10	PAWB-3B2-SW-B	3/15/2022	19.48	SW	FREEZE				1	1	1	1
T423.10	PAWB-3CP2-SW-1	3/15/2022	3.46	SW	FREEZE				1	1	1	1
T423.10	PAWB-3CP2-SW-20	3/15/2022	3.58	SW	FREEZE				1	1	1	1
T423.10	PAWB-3CP2-SW-40	3/15/2022	4.09	SW	FREEZE				1	1	1	1
T423.10	PAWB-3CP2-SW-B	3/15/2022	4.26	SW	FREEZE				1	1	1	1
T423.10	PAWB-EQ	3/15/2022	0.20	SW	FREEZE				1	1	1	1
T423.10	PAWB-WB	3/15/2022	0.15	SW	FREEZE				1	1	1	1

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ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic arsenic (EPA 1632)
T423.10	PAWE-1B1-SW-1	3/16/2022	0.44	SW	FREEZE				1	1	1	
T423.10	PAWE-1B1-SW-20	3/16/2022	0.53	SW	FREEZE				1	1	1	
T423.10	PAWE-1B1-SW-40	3/16/2022	1.03	SW	FREEZE				1	1	1	
T423.10	PAWE-1B1-SW-B	3/16/2022	1.19	SW	FREEZE				1	1	1	
T423.10	PAWE-1CP2-SW-1	3/16/2022	2.02	SW	FREEZE				1	1	1	
T423.10	PAWE-1CP2-SW-20	3/16/2022	2.09	SW	FREEZE				1	1	1	
T423.10	PAWE-1CP2-SW-40	3/16/2022	2.18	SW	FREEZE				1	1	1	
T423.10	PAWE-1CP2-SW-B	3/16/2022	2.30	SW	FREEZE				1	1	1	
T423.10	PAWE-3B3-SW-1	3/17/2022	0.31	SW	FREEZE				1	1	1	
T423.10	PAWE-3B3-SW-20	3/17/2022	0.37	SW	FREEZE				1	1	1	
T423.10	PAWE-3B3-SW-40	3/17/2022	0.46	SW	FREEZE				1	1	1	
T423.10	PAWE-3B3-SW-B	3/17/2022	0.57	SW	FREEZE				1	1	1	
T423.10	PAWE-3CP2-SW-1	3/17/2022	1.54	SW	FREEZE				1	1	1	
T423.10	PAWE-3CP2-SW-20	3/17/2022	2.02	SW	FREEZE				1	1	1	
T423.10	PAWE-3CP2-SW-20-FD	3/17/2022	2.09	SW	FREEZE				1	1	1	
T423.10	PAWE-3CP2-SW-40	3/17/2022	2.16	SW	FREEZE				1	1	1	
T423.10	PAWE-3CP2-SW-B	3/17/2022	2.28	SW	FREEZE				1	1	1	
T423.10	PAWE-EQ	3/16/2022	0.40	SW	FREEZE				1	1	1	
T423.10	PAWE-WB	3/16/2022	0.35	SW	FREEZE				1	1	1	
T423.11	CBREF-A1	3/24/2022	19.25	SED	FREEZE	1	1	1				
T423.11	CBREF-B1	3/24/2022	19.37	SED	FREEZE	1	1	1				
T423.11	CBREF-C1	3/24/2022	19.53	SED	FREEZE	1	1	1				
T423.11	WPWB-1B1Y	3/24/2022	11.24	SED	FREEZE	1	1	1				
T423.11	WPWB-1B2Y	3/24/2022	8.45	SED	FREEZE	1	1	1				
T423.11	WPWB-1B3X	3/24/2022	9.02	SED	FREEZE	1	1	1				
T423.11	WPWB-1C1	3/24/2022	12.25	SED	FREEZE	1	1	1				
T423.11	WPWB-1C1-FD	3/24/2022	12.33	SED	FREEZE	1	1	1				
T423.11	WPWB-1C2	3/24/2022	12.47	SED	FREEZE	1	1	1				
T423.11	WPWB-1C3	3/24/2022	13.03	SED	FREEZE	1	1	1				
T423.11	WPWB-1D1	3/24/2022	13.59	SED	FREEZE	1	1	1				
T423.11	WPWB-1D2	3/24/2022	13.41	SED	FREEZE	1	1	1				
T423.11	WPWB-1D3	3/24/2022	13.24	SED	FREEZE	1	1	1				
T423.11	WPWB-2B1X	3/24/2022	9.45	SED	FREEZE	1	1	1				
T423.11	WPWB-2C2	3/24/2022	10.00	SED	FREEZE	1	1	1				
T423.11	WPWB-3B1X	3/24/2022	11.06	SED	FREEZE	1	1	1				
T423.11	WPWB-3B2X	3/24/2022	5.32	SED	FREEZE	1	1	1				
T423.11	WPWB-3B3X	3/24/2022	5.48	SED	FREEZE	1	1	1				
T423.11	WPWB-3C1	3/24/2022	2.04	SED	FREEZE	1	1	1				
T423.11	WPWB-3C2	3/24/2022	2.21	SED	FREEZE	1	1	1				
T423.11	WPWB-3C3	3/24/2022	2.39	SED	FREEZE	1	1	1				
T423.11	WPWB-3D1	3/24/2022	1.42	SED	FREEZE	1	1	1				
T423.11	WPWB-3D2	3/24/2022	1.20	SED	FREEZE	1	1	1				
T423.11	WPWB-3D3	3/24/2022	0.86	SED	FREEZE	1	1	1				
T423.11	WPWB-4B1X	3/24/2022	3.51	SED	FREEZE	1	1	1				
T423.11	WPWB-4C2	3/24/2022	2.57	SED	FREEZE	1	1	1				
T423.11	WPWB-4C2-FD	3/24/2022	3.06	SED	FREEZE	1	1	1				

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CHAIN OF CUSTODY

Report to:
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ted.donn@tetratech.com

Project ID	SampleID	Date	Time	Medium	Preservation	Hg (EPA 1631B)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA 1631M)	Dry Weight	Hg (EPA 1631E)	Metals (As, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Pb, Zn) (EPA1640)	Tissue Hg (EPA 1631B)	Tissue - Inorganic arsenic (EPA 1632)
T423.11	CBREF-SW-1	3/24/2022	17:06	SW	FREEZE				1	1		
T423.11	CBREF-SW-20	3/24/2022	17:17	SW	FREEZE				1	1		
T423.11	CBREF-SW-40	3/24/2022	17:29	SW	FREEZE				1	1		
T423.11	CBREF-SW-B	3/24/2022	17:40	SW	FREEZE				1	1		
T423.11	WPWB-1B2Y-SW-1	3/24/2022	7:16	SW	FREEZE				1	1		
T423.11	WPWB-1B2Y-SW-1-FD	3/24/2022	7:23	SW	FREEZE				1	1		
T423.11	WPWB-1B2Y-SW-20	3/24/2022	7:29	SW	FREEZE				1	1		
T423.11	WPWB-1B2Y-SW-40	3/24/2022	7:39	SW	FREEZE				1	1		
T423.11	WPWB-1B2Y-SW-B	3/24/2022	7:52	SW	FREEZE				1	1		
T423.11	WPWB-3B2X-SW-1	3/24/2022	4:19	SW	FREEZE				1	1		
T423.11	WPWB-3B2X-SW-20	3/24/2022	4:27	SW	FREEZE				1	1		
T423.11	WPWB-3B2X-SW-40	3/24/2022	4:37	SW	FREEZE				1	1		
T423.11	WPWB-3B2X-SW-B	3/24/2022	4:50	SW	FREEZE				1	1		
T423.11	WPWB-EQ	3/24/2022	0:35	SW	FREEZE				1	1		
T423.11	WPWB-WB	3/24/2022	0:32	SW	FREEZE				1	1		
T423.12	G4I43REF-A1	3/29/2022	0:17	SED	FREEZE	1	1	1				
T423.12	G4I43REF-B1	3/29/2022	0:35	SED	FREEZE	1	1	1				
T423.12	G4I43REF-C1	3/29/2022	0:51	SED	FREEZE	1	1	1				
T423.12	SRWA-1B2X-A1	3/28/2022	15:32	SED	FREEZE	1	1	1				
T423.12	SRWA-2B2X-A1	3/28/2022	16:07	SED	FREEZE	1	1	1				
T423.12	SRWA-2B2X-A1-FD	3/28/2022	16:15	SED	FREEZE	1	1	1				
T423.12	SRWA-3B2X-A1	3/28/2022	16:47	SED	FREEZE	1	1	1				
T423.12	SRWA-4B2X-A1	3/28/2022	17:26	SED	FREEZE	1	1	1				
T423.14	TAWB-1B2X	3/26/2022	18:47	TISSUE	FREEZE						1	1
T423.14	TAWB-1CP2X	3/26/2022	20:14	TISSUE	FREEZE						1	1
T423.14	TAWB-1D2	3/26/2022	23:01	TISSUE	FREEZE						1	1
T423.14	TAWB-2B2X	3/26/2022	15:52	TISSUE	FREEZE						1	1
T423.14	TAWB-3B1Y	3/26/2022	0:21	TISSUE	FREEZE						1	1
T423.14	TAWB-3CP2	3/26/2022	2:16	TISSUE	FREEZE						1	1
T423.14	TAWB-3D2	3/26/2022	9:40	TISSUE	FREEZE						1	1
T423.14	TAWB-4B2X	3/26/2022	9:48	TISSUE	FREEZE						1	1
T423.14	TAWC-1B2X	3/25/2022	16:24	TISSUE	FREEZE						1	1
T423.14	TAWC-1CP2	3/25/2022	18:58	TISSUE	FREEZE						1	1
T423.14	TAWC-1D2	3/25/2022	21:42	TISSUE	FREEZE						1	1
T423.14	TAWC-2B2X	3/25/2022	14:23	TISSUE	FREEZE						1	1
T423.14	TAWC-3B2X	3/25/2022	3:53	TISSUE	FREEZE						1	1
T423.14	TAWC-3CP2	3/25/2022	4:52	TISSUE	FREEZE						1	1
T423.14	TAWC-3D2	3/25/2022	7:40	TISSUE	FREEZE						1	1
T423.14	TAWC-4B2X	3/25/2022	12:32	TISSUE	FREEZE						1	1
T423.14	TAWE-1B2X	3/27/2022	20:11	TISSUE	FREEZE						1	1
T423.14	TAWE-1CP2	3/27/2022	1:45	TISSUE	FREEZE						1	1
T423.14	TAWE-1D2	3/27/2022	4:47	TISSUE	FREEZE						1	1
T423.14	TAWE-2B2X	3/27/2022	17:23	TISSUE	FREEZE						1	1
T423.14	TAWE-3B2X	3/27/2022	13:09	TISSUE	FREEZE						1	1
T423.14	TAWE-3CP2	3/27/2022	15:00	TISSUE	FREEZE						1	1
T423.14	TAWE-3D2	3/27/2022	3:47	TISSUE	FREEZE						1	1
T423.14	TAWE-4B2X	3/27/2022	22:30	TISSUE	FREEZE						1	1

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CHAIN OF CUSTODY

Report to:
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ted.donn@tetratech.com

General Notes:


Please report results separately for each Project ID (T423.03, T423.05, t423.09, MKT2)
Please report all results to the MDL, J-flag results between MDL and RL
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.03	ERCPP-1002	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1003	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1009	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1011	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1011-DUP	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1015	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1024	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1025	FISH TISSUE	FROZEN	1	1	1
T423.03	ERCPP-1028	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1029	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1032	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1043	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1045	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1046	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1047	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1051	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1052	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1053	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1062	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1064	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1066	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1074	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1075	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1077	FISH TISSUE	FROZEN	1	1	1
T423.03	ERCPP-1078	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1079	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1080	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1082	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1101	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1108	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1109	FISH TISSUE	FROZEN	1		

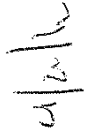
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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.03	ERCPP-1110	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1111	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1112	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1113	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1114	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1116	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1116-DUP	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1122	FISH TISSUE	FROZEN	1	1	1
T423.03	ERCPP-1125	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1126	FISH TISSUE	FROZEN	1		
T423.03	ERCPP-1128	FISH TISSUE	FROZEN	1	1	1
T423.03	ERWP-2002	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2003	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2004	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2013	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2013-DUP	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2014	FISH TISSUE	FROZEN	1	1	1
T423.03	ERWP-2023	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2027	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2028	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2029	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2031	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2032	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2043	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2044	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2045	FISH TISSUE	FROZEN	1	1	1
T423.03	ERWP-2049	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2050	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2051	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2051-DUP	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2052	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2053	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2054	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2056	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2061	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2062	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.03	ERWP-2081	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2086	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2087	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2088	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2101	FISH TISSUE	FROZEN	1	1	1
T423.03	ERWP-2102	FISH TISSUE	FROZEN	1		
T423.03	ERWP-2121	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.05	SACPP-2141	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2142	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2142-DUP	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2143	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2144	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2161	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2162	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2162-DUP	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2163	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2164	FISH TISSUE	FROZEN	1	1	1
T423.05	SACPP-2170	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2171	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2178	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2180	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2181	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2184	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2185	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2201	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2205	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2208	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2209	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2213	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2214	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2215	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2216	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2321	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2325	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2328	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2329	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2330	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2332	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2334	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2335	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2336	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2339	FISH TISSUE	FROZEN	1	1	1
T423.05	SACPP-2340	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-1 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.05	SACPP-2342	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2344	FISH TISSUE	FROZEN	1	1	1
T423.05	SACPP-2345	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2348	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2361	FISH TISSUE	FROZEN	1	1	1
T423.05	SACPP-2362	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2363	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2364	FISH TISSUE	FROZEN	1		
T423.05	SACPP-2367	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2221	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2227	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2232	FISH TISSUE	FROZEN	1	1	1
T423.05	SAWG-2234	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2237	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2242	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2244	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2249	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2250	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2261	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2262	FISH TISSUE	FROZEN	1	1	1
T423.05	SAWG-2263	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2263-DUP	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2264	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2267	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2268	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2268-DUP	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2271	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2272	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2274	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2278	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2278-DUP	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2279	FISH TISSUE	FROZEN	1	1	1
T423.05	SAWG-2280	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2281	FISH TISSUE	FROZEN	1		
T423.05	SAWG-2310	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.09	FUCPP-1141	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1142	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1142-DUP	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1143	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1144	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1145	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1146	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1147	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1148	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1149	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1241	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1243	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1245	FISH TISSUE	FROZEN	1	1	1
T423.09	FUCPP-1246	FISH TISSUE	FROZEN	1	1	1
T423.09	FUCPP-1247	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1248	FISH TISSUE	FROZEN	1	1	1
T423.09	FUCPP-1249	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1250	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1252	FISH TISSUE	FROZEN	1	1	1
T423.09	FUCPP-1254	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1261	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1262	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1265	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1282	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1283	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1283-DUP	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1284	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1286	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1287	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1288	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1289	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1291	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1301	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1302	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1303	FISH TISSUE	FROZEN	1		
T423.09	FUCPP-1305	FISH TISSUE	FROZEN	1		

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R. P. L.
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4/3/22

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6 of 11

Ship to:
Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.09	FUGPP-1306	FISH TISSUE	FROZEN	1		
T423.09	FUGPP-1308	FISH TISSUE	FROZEN	1		
T423.09	FUGPP-1309	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1161	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1162	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1162-DUP	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1164	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1165	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1166	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1167	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1169	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1171	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1172	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1174	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1176	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1177	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1178	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1178-DUP	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1179	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1180	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1181	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1183	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1185	FISH TISSUE	FROZEN	1	1	1
T423.09	FUWE-1186	FISH TISSUE	FROZEN	1	1	1
T423.09	FUWE-1187	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1188	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1191	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1192	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1193	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1194	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1201	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1203	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1204	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1205	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1207	FISH TISSUE	FROZEN	1	1	1
T423.09	FUWE-1209	FISH TISSUE	FROZEN	1	1	1

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Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.09	FUWE-1211	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1212	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1213	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1214	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1215	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1217	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1222	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1223	FISH TISSUE	FROZEN	1		
T423.09	FUWE-1225	FISH TISSUE	FROZEN	1		

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Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
MKT2	SKLMKT-001	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-001-DUP	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-002	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-003	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-004	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-005	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-006	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-007	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-008	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-009	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-010	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-011	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-012	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-012-DUP	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-013	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-014	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-015	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-016	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-017	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-018	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-019	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-020	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-021	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-022	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-023	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-024	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-025	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-026	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-027	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-028	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-029	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-030	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-031	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-032	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-032-DUP	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-033	FISH TISSUE	FROZEN	1		

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Report to:
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Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
MKT2	SKLMKT-035	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-037	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-038	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-039	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-040	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-043	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-044	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-045	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-046	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-047	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-049	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-052	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-053	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-054	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-055	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-057	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-058	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-059	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-061	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-062	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-063	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-064	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-066	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-070	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-071	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-072	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-073	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-074	FISH TISSUE	FROZEN	1	1	1
MKT2	SKLMKT-076	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-077	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-079	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-079-DUP	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-080	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-081	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-082	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-083	FISH TISSUE	FROZEN	1		

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USA

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-1 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
MKT2	SKLMKT-087	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-090	FISH TISSUE	FROZEN	1		
MKT2	SKLMKT-092	FISH TISSUE	FROZEN	1		

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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 580-112739-6

Login Number: 112739

List Source: Eurofins Seattle

List Number: 1

Creator: Groden, Kyle J

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	



United Analyst and Engineering Consultant Co., Ltd.

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260

Tel. 0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

Jun 21, 2022

Dr. Ted Donn

Tetra Tech, Inc.

3697 Mt. Diablo Blvd., Suite 150, Lafayette, CA 94549

RE: Submittal of laboratory analysis report for Project T423.11, DDPH Analysis of seawater

This covered letter is to submit laboratory analysis report for Project T423.11, DDPH Analysis of seawater service provided according to the UAE Quotation No. 2022-001820-R1 dated on March 11th, 2022.

It includes analysis results, chain of custody records, and case narrative for this service. Overall, the service is complete against customer's requirements on traceability, and quality control and assurance.

If you have any question concerning this report, please feel free to contact me.

Sincerely,

Piyapat Suttamanutwong

Laboratory and Research Development Manager

Ship to:
Piyapat S.
UAE Consultant Co., Ltd.
3 Soi Udomsuk 41, Sukhumvit Rd
Bangchak, Phrakhanong, Bangkok

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetrattech.com

Project ID	SampleID	Date	Time	Medium	Preservation	DDPH
T423.10-157	PAWE-3B3-SW-1	3/17/2022	0:31 /	SW	COLD	1
T423.10-158	PAWE-3B3-SW-20	3/17/2022	0:37 /	SW	COLD	1
T423.10-159	PAWE-3B3-SW-40	3/17/2022	0:46 /	SW	COLD	1
T423.10-160	PAWE-3B3-SW-B	3/17/2022	0:57 /	SW	COLD	1
T423.10-161	PAWE-3CP2-SW-1	3/17/2022	1:54 /	SW	COLD	1
T423.10-162	PAWE-3CP2-SW-20	3/17/2022	2:02 /	SW	COLD	1
T423.10-163	PAWE-3CP2-SW-20-FD	3/17/2022	2:09 /	SW	COLD	1
T423.10-164	PAWE-3CP2-SW-40	3/17/2022	2:16 /	SW	COLD	1
T423.10-165	PAWE-3CP2-SW-B	3/17/2022	2:28 /	SW	COLD	1
T423.10-166	PAWE-EQ	3/16/2022	0:40 /	SW	COLD	1
T423.10-167	PAWE-WB	3/16/2022	0:35 /	SW	COLD	1
T423.11-168	CBREF-SW-1	3/24/2022	17:08 /	SW	COLD	1
T423.11-169	CBREF-SW-20	3/24/2022	17:17 /	SW	COLD	1
T423.11-170	CBREF-SW-40	3/24/2022	17:29 /	SW	COLD	1
T423.11-171	CBREF-SW-B	3/24/2022	17:40 /	SW	COLD	1
T423.11-172	WPWB-1B2Y-SW-1	3/24/2022	7:16 /	SW	COLD	1
T423.11-173	WPWB-1B2Y-SW-1-FD	3/24/2022	7:23 /	SW	COLD	1
T423.11-174	WPWB-1B2Y-SW-20	3/24/2022	7:29 /	SW	COLD	1
T423.11-175	WPWB-1B2Y-SW-40	3/24/2022	7:39 /	SW	COLD	1
T423.11-176	WPWB-1B2Y-SW-B	3/24/2022	7:52 /	SW	COLD	1
T423.11-177	WPWB-3B2X-SW-1	3/24/2022	4:19 /	SW	COLD	1
T423.11-178	WPWB-3B2X-SW-20	3/24/2022	4:27 /	SW	COLD	1
T423.11-179	WPWB-3B2X-SW-40	3/24/2022	4:37 /	SW	COLD	1
T423.11-180	WPWB-3B2X-SW-B	3/24/2022	4:50 /	SW	COLD	1
T423.11-181	WPWB-EQ	3/24/2022	0:35 /	SW	COLD	1
T423.11-182	WPWB-WB	3/24/2022	0:32 /	SW	COLD	1
T423.14-183	TAWB-1B2X-SW-1	3/26/2022	12:28 /	SW	COLD	1
T423.14-184	TAWB-1B2X-SW-20	3/26/2022	12:35 /	SW	COLD	1
T423.14-185	TAWB-1B2X-SW-20-FD	3/26/2022	12:42 /	SW	COLD	1
T423.14-186	TAWB-1B2X-SW-40	3/26/2022	12:50 /	SW	COLD	1
T423.14-187	TAWB-1B2X-SW-B	3/26/2022	13:02 /	SW	COLD	1
T423.14-188	TAWB-3B1Y-SW-1	3/26/2022	14:16 /	SW	COLD	1
T423.14-189	TAWB-3B1Y-SW-20	3/26/2022	14:23 /	SW	COLD	1
T423.14-190	TAWB-3B1Y-SW-40	3/26/2022	14:32 /	SW	COLD	1
T423.14-191	TAWB-3B1Y-SW-B	3/26/2022	14:43 /	SW	COLD	1
T423.14-192	TAWC-1B2X-SW-1	3/25/2022	2:00 /	SW	COLD	1
T423.14-193	TAWC-1B2X-SW-20	3/25/2022	2:12 /	SW	COLD	1
T423.14-194	TAWC-1B2X-SW-40	3/25/2022	2:25 /	SW	COLD	1
T423.14-195	TAWC-1B2X-SW-B	3/25/2022	2:39 /	SW	COLD	1

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 UNITED ANALYST AND ENGINEERING
CONSULTANT COMPANY LIMITED

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Number : 1


FOR CLIENT
FOR UAE

CLIENT	: TETRA TECH INC.	ANALYSIS NO.	: T22AG357-0001 - T22AG357-0213	PROJECT CODE	: 22-00448	CLIENT ID	: 16-00432
ADDRESS	: 77 SOI UDOMSUK 39/1 SUKHUMVIT 103 ROAD BANG CHAK BANGKOK 10260	QUOTATION NUMBER	: 2022-001820	SAMPLING BY	: Customer		
TELEPHONE	: +66 (0) 86-990-9863	FAX	:	PAYMENT TERM	: 1 / 1	WITNESS	:
CONTACT PERSON	: Mr.SUKSAN JINANARONG	SECTION	:	UAE. CONTACT	: MissPatcharee Saengsuk	LOCATION	:
PROJECT NAME	: Analysis of Seawater Quality) จำนวน 215 ตัวอย่าง	SECTION	:				

ITEM	ANALYSIS NUMBER	SAMPLE NAME	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	SAMPLING METHOD	CONTAINER TYPE	QUANTITY	REQUIRED PARAMETER
163	T22AG357-0163	PAWE-3CP2-SW-20-FD	17 March	02:09	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
164	T22AG357-0164	PAWE-3CP2-SW-40	17 March	02:16	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
165	T22AG357-0165	PAWE-3CP2-SW-B	17 March	02:28	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
166	T22AG357-0166	PAWE-EQ	16 March	00:40	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
167	T22AG357-0167	PAWE-WB	16 March	00:35	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
168	T22AG357-0168	CBREF-SW-1	24 March	17:08	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						

TRANSFER RECORD	NAME	SIGNATURE	DATE	TIME	CHECKMARK RELEASED	CHECKMARK RECEIVED	EXTERNAL SAMPLE CONDITION
1	นาย	นาง	4/4/68	11.49		Complete	<input type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete
Analysis Method		Delivery Analysis		Sample Return		Remarks	
<input type="radio"/> standard Method <input type="radio"/> Quation		<input type="radio"/> Mail/Messenger <input type="radio"/> Receive by Hand <input type="radio"/> Report		<input type="radio"/> Yes <input type="radio"/> No (Disposal sample afer send analysis report to customer 15 days)			


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Number : 1


FOR CLIENT
FOR UAE

CLIENT	: TETRA TECH INC.	ANALYSIS NO.	: T22AG357-0001 - T22AG357-0213	PROJECT CODE	: 22-00448	CLIENT ID	: 16-00432
ADDRESS	: 77 SOI UDOMSUK 39/1 SUKHUMVIT 103 ROAD BANG CHAK BANGKOK 10260	QUOTATION NUMBER	: 2022-001820	SAMPLING BY	: Customer		
TELEPHONE	: +66 (0) 86-990-9863	FAX	:	PAYMENT TERM	: 1 / 1	WITNESS	:
CONTACT PERSON	: Mr.SUKSAN JINANARONG	SECTION	:	UAE. CONTACT	: MissPatcharee Saengsuk	LOCATION	:
PROJECT NAME	: Analysis of Seawater Quality) จำนวน 215 ตัวอย่าง	SECTION	:				

ITEM	ANALYSIS NUMBER	SAMPLE NAME	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	SAMPLING METHOD	CONTAINER TYPE	QUANTITY	REQUIRED PARAMETER
169	T22AG357-0169	CBREF-SW-20	24 March	17:17	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
170	T22AG357-0170	CBREF-SW-40	24 March	17:29	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
171	T22AG357-0171	CBREF-SW-B	24 March	17:40	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
172	T22AG357-0172	WPWB-1B2Y-SW-1	24 March	07:16	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
173	T22AG357-0173	WPWB-1B2Y-SW-1-FD	24 March	07:23	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
174	T22AG357-0174	WPWB-1B2Y-SW-20	24 March	07:29	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						

TRANSFER RECORD	NAME	SIGNATURE	DATE	TIME	CHECKMARK RELEASED	CHECKMARK RECEIVED	EXTERNAL SAMPLE CONDITION
1	<i>nam</i>	<i>nam</i>	4/4/65	11.49		<input checked="" type="checkbox"/> Complete	<input type="checkbox"/> Incomplete
						<input type="checkbox"/> Complete	<input type="checkbox"/> Incomplete
						<input type="checkbox"/> Complete	<input type="checkbox"/> Incomplete
Analysis Method	Delivery Analysis	Sample Return	Remarks				
<input type="radio"/> standard Method <input type="radio"/> Quation	<input type="radio"/> Mail/Messenger <input type="radio"/> Receive by Hand <input type="radio"/> Report	<input type="radio"/> Yes <input type="radio"/> No (Disposal sample afer send analysis report to customer 15 days)					


United Analyst and Engineering Consultant Co., Ltd.
CHAIN-OF-CUSTODY

 UNITED ANALYST AND ENGINEERING
CONSULTANT COMPANY LIMITED

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260 Tel. : 0-2763-2828, Fax. : 0-2763-2800

Number : 1


FOR CLIENT
FOR UAE

CLIENT : TETRA TECH INC.					ANALYSIS NO. : T22AG357-0001 - T22AG357-0213		PROJECT CODE : 22-00448		CLIENT ID : 16-00432	
ADDRESS : 77 SOI UDOMSUK 39/1 SUKHUMVIT 103 ROAD BANG CHAK BANGKOK 10260					QUOTATION NUMBER : 2022-001820		SAMPLING BY : Customer			
TELEPHONE : +66 (0) 86-990-9863 FAX :					PAYMENT TERM : 1 / 1		WITNESS :			
CONTACT PERSON : Mr.SUKSAN JINANARONG SECTION :					UAE. CONTACT : MissPatcharee Saengsuk		LOCATION :			
PROJECT NAME : Analysis of Seawater Quality) จำนวน 215 ตัวอย่าง					SECTION :					

ITEM	ANALYSIS NUMBER	SAMPLE NAME	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	SAMPLING METHOD	CONTAINER TYPE	QUANTITY	REQUIRED PARAMETER
175	T22AG357-0175	WPWB-1B2Y-SW-40	24 March	07:39	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
176	T22AG357-0176	WPWB-1B2Y-SW-B	24 March	07:52	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
177	T22AG357-0177	WPWB-3B2X-SW-1	24 March	04:19	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
178	T22AG357-0178	WPWB-3B2X-SW-20	24 March	04:27	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
179	T22AG357-0179	WPWB-3B2X-SW-40	24 March	04:37	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
180	T22AG357-0180	WPWB-3B2X-SW-B	24 March	04:50	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						

TRANSFER RECORD	NAME	SIGNATURE	DATE	TIME	CHECKMARK RELEASED	CHECKMARK RECEIVED	EXTERNAL SAMPLE CONDITION
1	มด	มด	4/4/20	11.49			<input checked="" type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete
Analysis Method		Delivery Analysis		Sample Return		Remarks	
<input type="radio"/> standard Method <input type="radio"/> Quation		<input type="radio"/> Mail/Messenger <input type="radio"/> Receive by Hand <input type="radio"/> Report		<input type="radio"/> Yes <input type="radio"/> No (Disposal sample afer send analysis report to customer 15 days)			


United Analyst and Engineering Consultant Co., Ltd.

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260 Tel. : 0-2763-2828, Fax. : 0-2763-2800

 UNITED ANALYST AND ENGINEERING
CONSULTANT COMPANY LIMITED

 e-mail : lab@uaeconsultant.com <<mailto:lab@uaeconsultant.com>>

<http://www.uaeconsultant.com>
CHAIN-OF-CUSTODY

Number : 1


FOR CLIENT
FOR UAE

CLIENT : TETRA TECH INC.					ANALYSIS NO. : T22AG357-0001 - T22AG357-0213		PROJECT CODE : 22-00448		CLIENT ID : 16-00432	
ADDRESS : 77 SOI UDOMSUK 39/1 SUKHUMVIT 103 ROAD BANG CHAK BANGKOK 10260					QUOTATION NUMBER : 2022-001820		SAMPLING BY : Customer			
TELEPHONE : +66 (0) 86-990-9863 FAX :					PAYMENT TERM : 1 / 1		WITNESS :			
CONTACT PERSON : Mr.SUKSAN JINANARONG SECTION :					UAE CONTACT : MissPatcharee Saengsuk		LOCATION :			
PROJECT NAME : Analysis of Seawater Quality) จำนวน 215 ตัวอย่าง					SECTION :					

ITEM	ANALYSIS NUMBER	SAMPLE NAME	SAMPLING DATE	SAMPLING TIME	SAMPLE TYPE	SAMPLING METHOD	CONTAINER TYPE	QUANTITY	REQUIRED PARAMETER
181	T22AG357-0181	WPWB-EQ	24 March	00:35	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
182	T22AG357-0182	WPWB-WB	24 March	00:30	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
183	T22AG357-0183	TAWB-1B2X-SW-1	26 March	12:28	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
184	T22AG357-0184	TAWB-1B2X-SW-20	26 March	12:35	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
185	T22AG357-0185	TAWB-1B2X-SW-20-FD	26 March	12:42	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						
186	T22AG357-0186	TAWB-1B2X-SW-40	26 March	12:50	SEAWATER	-	ขวดพลาสติก PE 240 mL	1	Attachment
			2022						

TRANSFER RECORD	NAME	SIGNATURE	DATE	TIME	CHECKMARK RELEASED	CHECKMARK RECEIVED	EXTERNAL SAMPLE CONDITION
1	man		4/4/05	11.49			<input type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete
							<input type="radio"/> Complete <input type="radio"/> Incomplete

Analysis Method		Delivery Analysis		Sample Return		Remarks	
<input type="radio"/> standard Method <input type="radio"/> Quation		<input type="radio"/> Mail/Messenger <input type="radio"/> Receive by Hand <input type="radio"/> Report		<input type="radio"/> Yes <input type="radio"/> No (Disposal sample afer send analysis report to customer 15 days)			

Attachment

CLIENT ID : 16-00432



COC ID : 1

2022-001820

ITEM	SAMPLE NAME	REQUIRED PARAMETER
127	PACPP-4C2-SW-B	TPH
128	PACPP-EQ	TPH
129	PACPP-WB	TPH
130	PAREF-SW-1	TPH
131	PAREF-SW-20	TPH
132	PAREF-SW-40	TPH
133	PAREF-SW-B	TPH
134	PAWB-1CP2-SW-1	TPH
135	PAWB-1CP2-SW-20	TPH
136	PAWB-1CP2-SW-40	TPH
137	PAWB-1CP2-SW-B	TPH
138	PAWB-3B2-SW-1	TPH
139	PAWB-3B2-SW-1-FD	TPH
140	PAWB-3B2-SW-20	TPH
141	PAWB-3B2-SW-40	TPH
142	PAWB-3B2-SW-B	TPH
143	PAWB-3CP2-SW-1	TPH
144	PAWB-3CP2-SW-20	TPH
145	PAWB-3CP2-SW-40	TPH
146	PAWB-3CP2-SW-B	TPH
147	PAWB-EQ	TPH
148	PAWB-WB	TPH
149	PAWE-1B1-SW-1	TPH
150	PAWE-1B1-SW-20	TPH
151	PAWE-1B1-SW-40	TPH
152	PAWE-1B1-SW-B	TPH
153	PAWE-1CP2-SW-1	TPH
154	PAWE-1CP2-SW-20	TPH
155	PAWE-1CP2-SW-40	TPH
156	PAWE-1CP2-SW-B	TPH
157	PAWE-3B3-SW-1	TPH
158	PAWE-3B3-SW-20	TPH
159	PAWE-3B3-SW-40	TPH
160	PAWE-3B3-SW-B	TPH
161	PAWE-3CP2-SW-1	TPH
162	PAWE-3CP2-SW-20	TPH
163	PAWE-3CP2-SW-20-FD	TPH
164	PAWE-3CP2-SW-40	TPH
165	PAWE-3CP2-SW-B	TPH
166	PAWE-EQ	TPH
167	PAWE-WB	TPH
168	CBREF-SW-1	TPH

Attachment

CLIENT ID : 16-00432



COC ID : 1

2022-001820

ITEM	SAMPLE NAME	REQUIRED PARAMETER
169	CBREF-SW-20	TPH
170	CBREF-SW-40	TPH
171	CBREF-SW-B	TPH
172	WPWB-1B2Y-SW-1	TPH
173	WPWB-1B2Y-SW-1-FD	TPH
174	WPWB-1B2Y-SW-20	TPH
175	WPWB-1B2Y-SW-40	TPH
176	WPWB-1B2Y-SW-B	TPH
177	WPWB-3B2X-SW-1	TPH
178	WPWB-3B2X-SW-20	TPH
179	WPWB-3B2X-SW-40	TPH
180	WPWB-3B2X-SW-B	TPH
181	WPWB-EQ	TPH
182	WPWB-WB	TPH
183	TAWB-1B2X-SW-1	TPH
184	TAWB-1B2X-SW-20	TPH
185	TAWB-1B2X-SW-20-FD	TPH
186	TAWB-1B2X-SW-40	TPH
187	TAWB-1B2X-SW-B	TPH
188	TAWB-3B1Y-SW-1	TPH
189	TAWB-3B1Y-SW-20	TPH
190	TAWB-3B1Y-SW-40	TPH
191	TAWB-3B1Y-SW-B	TPH
192	TAWC-1B2X-SW-1	TPH
193	TAWC-1B2X-SW-20	TPH
194	TAWC-1B2X-SW-40	TPH
195	TAWC-1B2X-SW-B	TPH
196	TAWC-3B2X-SW-1	TPH
197	TAWC-3B2X-SW-20	TPH
198	TAWC-3B2X-SW-40	TPH
199	TAWC-3B2X-SW-B	TPH
200	TAWC-EQ	TPH
201	TAWC-WB	TPH
202	TAWC-1B2X-SW-1	TPH
203	TAWC-1B2X-SW-20	TPH
204	TAWC-1B2X-SW-40	TPH
205	TAWC-1B2X-SW-B	TPH
206	TAWC-3B2X-SW-1	TPH
207	TAWC-3B2X-SW-20	TPH
208	TAWC-3B2X-SW-40	TPH
209	TAWC-3B2X-SW-40-FD	TPH
210	TAWC-3B2X-SW-B	TPH

CASE NARRATIVE

Project T423.11 - :

All water samples were received and registered by United Analyst and Engineering Consultant Co, Ltd. on April 01, 2022 in a proper preservation condition; sealed cooler with a temperature of 4 °C. Sample conditions are ready for sample testing according to agreed standard test method.

The samples were prepared and analyzed by pre-concentration and fluorescence Spectrophotometric method in accordance with required international test method referred to Intergovernmental Oceanographic Commission (MARPOLMON-P). Analytical batches are in quality control status and trend. Analysis results are measured correctly and precisely against established acceptance criteria.

Overall, the analysis results is traceable, accurate and precise to meet customer's need and requirement. Non-compliance has not observed.

ANALYSIS REPORT

PROJECT NAME : CHEVRON ENVIRONMENTAL MONITORING CAMPAIGN DURING 11 MARCH - 3 APRIL 2022.

CUSTOMER NAME : TETRA TECH INC.

ADDRESS : 77 SOI UDOMSUK 39/1, SUKHUMVIT 103 ROAD, BANGCHAK, PRAKHANONG, BANGKOK 10260.
TEL. 0 2361 3767 FAX 0 2361 3768

SAMPLING SOURCE : -

SAMPLE TYPE : SEAWATER **RECEIVED DATE** : 04-04-2022

SAMPLING DATE : * **ANALYTICAL DATE** : 18-03-2022 - 12-05-2022

SAMPLING TIME : * **ANALYSIS NO.** : **

SAMPLING METHOD : - **WORK NO.** : LAB1820-R1/2022

ANALYZED BY : MR THAPAGORN PIMSORN **REPORT NO.** : L2022-U046684

PROJECT	SAMPLE NAME	ANALYSIS NO.**	MATRIX	SAMPING DATE*
T423.11	CBREF-SW-1	T22AG357-0168	SEAWATER	24-03-2022 17:08:00
T423.11	CBREF-SW-20	T22AG357-0169	SEAWATER	24-03-2022 17:17:00
T423.11	CBREF-SW-40	T22AG357-0170	SEAWATER	24-03-2022 17:29:00
T423.11	CBREF-SW-B	T22AG357-0171	SEAWATER	24-03-2022 17:40:00
T423.11	WPWB-1B2Y-SW-1	T22AG357-0172	SEAWATER	24-03-2022 07:16:00
T423.11	WPWB-1B2Y-SW-1-FD	T22AG357-0173	SEAWATER	24-03-2022 07:23:00
T423.11	WPWB-1B2Y-SW-20	T22AG357-0174	SEAWATER	24-03-2022 07:29:00
T423.11	WPWB-1B2Y-SW-40	T22AG357-0175	SEAWATER	24-03-2022 07:39:00
T423.11	WPWB-1B2Y-SW-B	T22AG357-0176	SEAWATER	24-03-2022 07:52:00
T423.11	WPWB-3B2X-SW-1	T22AG357-0177	SEAWATER	24-03-2022 04:19:00
T423.11	WPWB-3B2X-SW-20	T22AG357-0178	SEAWATER	24-03-2022 04:27:00
T423.11	WPWB-3B2X-SW-40	T22AG357-0179	SEAWATER	24-03-2022 04:37:00
T423.11	WPWB-3B2X-SW-B	T22AG357-0180	SEAWATER	24-03-2022 04:50:00
T423.11	WPWB-EQ	T22AG357-0181	SEAWATER	24-03-2022 00:35:00
T423.11	WPWB-WB	T22AG357-0182	SEAWATER	24-03-2022 00:30:00

**United Analyst and Engineering Consultant Co., Ltd.**

3 Soi Udomsuk 41, Sukhumvit Road, Bangchak, Phrakhanong, Bangkok 10260

Tel. 0 2763 2828 Fax 0 2763 2800 www.uaeconsultant.com E-mail: uae@uaeconsultant.com

PROJECT **T423.11**

ANALYTE	METHOD
DISSOLVED/DISPERSED PETROLEUM HYDROCARBON	IOC MARPOLMON-P

SAMPLE NAME	ANALYSIS NO.	PREPARED	ANALYZED	BATCH	RESULT	MDL	RL	UNITS	DILUTION	NOTES
CBREF-SW-1	T22AG357-0168	24-03-2022	12-05-2022	247459	0.24	0.04	0.10	ug/L as Chrysene	1	
CBREF-SW-20	T22AG357-0169	24-03-2022	12-05-2022	247459	0.23	0.04	0.10	ug/L as Chrysene	1	
CBREF-SW-40	T22AG357-0170	24-03-2022	12-05-2022	247459	0.33	0.04	0.10	ug/L as Chrysene	1	
CBREF-SW-B	T22AG357-0171	24-03-2022	12-05-2022	247459	0.26	0.04	0.10	ug/L as Chrysene	1	
WPWB-1B2Y-SW-1	T22AG357-0172	24-03-2022	12-05-2022	247459	0.35	0.04	0.10	ug/L as Chrysene	1	
WPWB-1B2Y-SW-1-FD	T22AG357-0173	24-03-2022	12-05-2022	247459	0.35	0.04	0.10	ug/L as Chrysene	1	
WPWB-1B2Y-SW-20	T22AG357-0174	24-03-2022	12-05-2022	247459	0.26	0.04	0.10	ug/L as Chrysene	1	
WPWB-1B2Y-SW-40	T22AG357-0175	24-03-2022	12-05-2022	247459	0.17	0.04	0.10	ug/L as Chrysene	1	
WPWB-1B2Y-SW-B	T22AG357-0176	24-03-2022	12-05-2022	247459	0.18	0.04	0.10	ug/L as Chrysene	1	
WPWB-3B2X-SW-1	T22AG357-0177	24-03-2022	12-05-2022	247459	0.33	0.04	0.10	ug/L as Chrysene	1	
WPWB-3B2X-SW-20	T22AG357-0178	24-03-2022	12-05-2022	247459	0.24	0.04	0.10	ug/L as Chrysene	1	
WPWB-3B2X-SW-40	T22AG357-0179	24-03-2022	12-05-2022	247459	0.65	0.04	0.10	ug/L as Chrysene	1	
WPWB-3B2X-SW-B	T22AG357-0180	24-03-2022	12-05-2022	247459	0.25	0.04	0.10	ug/L as Chrysene	1	
WPWB-EQ	T22AG357-0181	24-03-2022	12-05-2022	247459	ND	0.04	0.10	ug/L as Chrysene	1	
WPWB-WB	T22AG357-0182	24-03-2022	12-05-2022	247459	ND	0.04	0.10	ug/L as Chrysene	1	

QUALITY CONTROL

PROJECT T423.11

ANALYTE	METHOD
DISSOLVED/DISPERSED PETROLEUM HYDROCARBON	IOC MARPOLMON-P

BATCH 247459 **PREPARED** 24-03-2022 **ANALYZED** 12-05-2022

QC TYPE	ANALYSIS NO.	RESULT	MDL	RL	UNITS	SOURCE RESULT	SPIKE LEVEL	%REC	%REC LIMITS	RPD	RPD LIMIT	NOTES
Blank		ND	0.04	0.10	ug/L as Chrysene							
CCS		0.50	0.04	0.10	ug/L as Chrysene		0.50	100	90-110			
CCV		0.50	0.04	0.10	ug/L as Chrysene		0.50	100	90-110	0.00	20	
LCS		1.17	0.04	0.10	ug/L as Chrysene		1.17	100	80-120			
LCS Dup		1.13	0.04	0.10	ug/L as Chrysene		1.17	97	80-120	3.06	20	
Sample	T21AS357-0168	0.24	0.04	0.10	ug/L as Chrysene							
Sample LabDup	T21AS357-0168.1	0.24	0.04	0.10	ug/L as Chrysene					0.00	20	
Matrix Spike		1.34	0.04	0.10	ug/L as Chrysene	0.23	1.17	95	80-120			
Matrix Spike Dup		1.36	0.04	0.10	ug/L as Chrysene	T21AS357-0169	1.17	97	80-120	2.08	20	

NOTES AND DEFINITIONS :

ND Analyte NOT DETECTED at or above the MDL

Karnphong B.

(MR KARNPHONG BOONPUANG)

TECHNICAL MANAGEMENT

20-06-2022

Piyapat S.

(MRS PIYAPAT SUTTAMANUTWONG)

LABORATORY SUPERVISOR

20-06-2022

- DO NOT COPY PARTIAL OF THIS ANALYSIS REPORT WITHOUT OFFICIAL APPROVAL.
- REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.



Analysis / Test Report

Report to : Tetra Tech Inc.

77 Soi Udomsuk 39/1, Sukhumvit 103, Bangchak, Prakanong, Bangkok Thailand 10260

P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

Report Number : 2277453-1

Page 1 of 14

Summary Samples

Sample Location	ALS Sample ID	Sample Description	Sampling Date / Time	Received Date / Time
CBREF-SW-1	2241553-1	Seawater	Mar 24, 2022 05:08 PM	Apr 02, 2022 02:00 PM
CBREF-SW-20	2241553-2	Seawater	Mar 24, 2022 05:17 PM	Apr 02, 2022 02:00 PM
CBREF-SW-40	2241553-3	Seawater	Mar 24, 2022 05:29 PM	Apr 02, 2022 02:00 PM
CBREF-SW-B	2241553-4	Seawater	Mar 24, 2022 05:40 PM	Apr 02, 2022 02:00 PM
WPWB-1B2Y-SW-1	2241553-5	Seawater	Mar 24, 2022 07:16 AM	Apr 02, 2022 02:00 PM
WPWB-1B2Y-SW-20	2241553-6	Seawater	Mar 24, 2022 07:29 AM	Apr 02, 2022 02:00 PM
WPWB-1B2Y-SW-40	2241553-7	Seawater	Mar 24, 2022 07:39 AM	Apr 02, 2022 02:00 PM
WPWB-1B2Y-SW-B	2241553-8	Seawater	Mar 24, 2022 07:52 AM	Apr 02, 2022 02:00 PM
WPWB-3B2X-SW-1	2241553-9	Seawater	Mar 24, 2022 04:19 AM	Apr 02, 2022 02:00 PM
WPWB-3B2X-SW-20	2241553-10	Seawater	Mar 24, 2022 04:27 AM	Apr 02, 2022 02:00 PM
WPWB-3B2X-SW-40	2241553-11	Seawater	Mar 24, 2022 04:37 AM	Apr 02, 2022 02:00 PM
WPWB-3B2X-SW-B	2241553-12	Seawater	Mar 24, 2022 04:50 AM	Apr 02, 2022 02:00 PM

The above results are valid only for the analyzed/tested sample(s) as indicated in this report. No part of this report or certificate may be reproduced in any form without written consent from the Laboratory. ALS Laboratory Group (Thailand) strongly recommends that this report is not reproduced except in full.

Approved by

Nanthawadee Somboon

Specialist 1

ADDRESS 104 Phatthanakan 40, Phatthanakan Rd., Khwaeng Phatthanakan, Khet Suan Luang, Bangkok 10250 Thailand | PHONE +66 0 2760 3000 | FAX +66 0 2760 3197

ALS LABORATORY GROUP (THAILAND) CO., LTD. Part of the ALS Group

Life Sciences

www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



Analysis / Test Report

Report to : Tetra Tech Inc.

77 Soi Udomsuk 39/1, Sukhumvit 103, Bangchak, Prakhnong, Bangkok Thailand 10260

P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

Report Number : 2277453-1

Page 2 of 14

General Comments

Analysis Test Report contains Summary samples, General Comments and Analytical Results. Quality Control Report will be found in the following separate attachments. The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where the LOD and LOQ of a reported result differs from standard, this may be due to high moisture content or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

LOD : Limit of detection.

LOQ : Limit of Quantitation.

ND : The result is not detected.

U : Indicates the result is less than LOD.

J : Indicates an estimated value, The reported value was obtained from a reading that was less than the LOQ but greater than or equal to the LOD.

The samples received on Apr 02, 2022 were intact, on-ice within 2 sealed cooler at

Cooler 1 : Temperature 1.6 degree C

Cooler 2 : Temperature 2.3 degree C

Sample Preparation and Analysis

Total suspended solids

A well-mixed sample is filtered through a weighed 1.2 µm pore size glass fibre filter paper and the residue retained on the filter is dried at 103-105 degree C. The increase in the weight of the filter paper represents the total suspended solids.

COD

Samples are digested with an acidic potassium dichromate (a known excess) solution using silver sulfate as a catalyst. The chromium is used to oxidise almost all types of organic compounds and most inorganic reducing agents and reduced from the Cr(VI) oxidation state to the Cr(III) state. Both of these chromium species are coloured and absorb in the visible region of the spectrum. The dichromate ion absorbs strongly in the 400nm region, where the chromic ion (Cr3+) absorption is much less. The chromic ion absorbs strongly in the 600 nm region, where the dichromate has nearly zero absorption. The oxidisable organic matter can be calculated in terms of oxygen equivalents

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Specialist 1



Analysis / Test Report

Report to : Tetra Tech Inc.

77 Soi Udomsuk 39/1, Sukhumvit 103, Bangchak, Prakanong, Bangkok Thailand 10260

P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-1
Sampling Date Mar 24, 2022 5:08 PM
Sample Description Seawater
Location CBREF-SW-1
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	55	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-2
Sampling Date Mar 24, 2022 5:17 PM
Sample Description Seawater
Location CBREF-SW-20
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	82	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-3
Sampling Date Mar 24, 2022 5:29 PM
Sample Description Seawater
Location CBREF-SW-40
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	82	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-4
Sampling Date Mar 24, 2022 5:40 PM
Sample Description Seawater
Location CBREF-SW-B
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	55	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

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Reference Number 2241553-5
Sampling Date Mar 24, 2022 7:16 AM
Sample Description Seawater
Location WPWB-1B2Y-SW-1
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	62	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

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Reference Number 2241553-6
Sampling Date Mar 24, 2022 7:29 AM
Sample Description Seawater
Location WPWB-1B2Y-SW-20
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	49	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	J
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09933	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

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Reference Number 2241553-7
Sampling Date Mar 24, 2022 7:39 AM
Sample Description Seawater
Location WPWB-1B2Y-SW-40
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	62	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	0.3	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	J

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-8
Sampling Date Mar 24, 2022 7:52 AM
Sample Description Seawater
Location WPWB-1B2Y-SW-B
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	62	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	0.4	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	J

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

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Reference Number 2241553-9
Sampling Date Mar 24, 2022 4:19 AM
Sample Description Seawater
Location WPWB-3B2X-SW-1
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	36	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	J
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-10
Sampling Date Mar 24, 2022 4:27 AM
Sample Description Seawater
Location WPWB-3B2X-SW-20
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	55	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-11
Sampling Date Mar 24, 2022 4:37 AM
Sample Description Seawater
Location WPWB-3B2X-SW-40
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	42	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	J
Total Suspended Solids	ND	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	U

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77 Soi Udomsuk 39/1, Sukhumvit 103, Bangchak, Prakanong, Bangkok Thailand 10260

P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Reference Number 2241553-12
Sampling Date Mar 24, 2022 4:50 AM
Sample Description Seawater
Location WPWB-3B2X-SW-B
Condition of Sample Contained in three plastic bottles, sample containers comply to pretreatment - preservation standards (APHA, USEPA)

Analyte	Result	LOD	LOQ	Unit	Dilution	Batch No.	Prepared Date	Analyzed Date	Method	Note
Water Testing										
COD	69	10	50	mg/L	1	WL22/10114	Apr 05, 2022	Apr 05, 2022	APHA (2017) ,5220 C	
Total Suspended Solids	0.4	0.3	1	mg/L	1	WL22/09934	Apr 04, 2022	Apr 04, 2022	APHA (2017) ,2540 D	J

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P/O :

Project Name : T423.11

Project Location :

Lot ID: 2241553

Date Received : Apr 02, 2022

Date Reported : Apr 29, 2022

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Quality Control Data

QC Type	Parent	Result	LOD	LOQ	Unit	Parent Result	Spike Level	%Rec	%Rec Limit	%RPD	%RPD Limit	Note
Water Testing : WL22/09933 : Total Suspended Solids												
Blank		ND	0.3	1	mg/L							U
Duplicate	2241553-6	ND	0.3	1	mg/L	ND				n/a	5	U
LCS		99.8	0.3	1	mg/L		100	99.8	90 - 110			
Water Testing : WL22/09934 : Total Suspended Solids												
Blank		ND	0.3	1	mg/L							U
Duplicate	2241555-5	0.3	0.3	1	mg/L	0.3				n/a	5	J
LCS		99.2	0.3	1	mg/L		100	99.2	90 - 110			
Water Testing : WL22/10114 : COD												
Blank		ND	10	50	mg/L							U
Duplicate	2241553-6	49	10	50	mg/L	49				n/a	10	J
LCS		211	10	50	mg/L		200	105.5	90 - 110			
Duplicate	2241553-12	68.60	10	50	mg/L	68.5				0.01	10	
Matrix Spike	2241553-12	175	10	50	mg/L	68.5	100	106.5	90 - 110			
Matrix Spike Dup	2241553-12	174	10	50	mg/L	68.5	100	105.5	90 - 110	0.49	10	
LCS		201	10	50	mg/L		200	100.5	90 - 110			

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Specialist 1



June 02, 2022

Theodore E. Donn
Tetra Tech, Inc.
3746 Mt. Diablo Blvd,
Lafayette, CA 94549-

Project Name: T423.11
Physis Project ID: 2107007-003

Dear Theodore,

Enclosed are the analytical results for samples submitted to PHYSIS Environmental Laboratories, Inc. (PHYSIS) on 4/21/2022. A total of 12 samples were received for analysis in accordance with the attached chain of custody (COC). Per the COC, the samples were analyzed for:

Organics
Total Organic Carbon by SM 5310 B

Analytical results in this report apply only to samples submitted to PHYSIS in accordance with the COC and are intended to be considered in their entirety.

Please feel free to contact me at any time with any questions. PHYSIS appreciates the opportunity to provide you with our analytical and support services.

Regards,

Rachel Hansen
714 602-5320
Extension 203
rachelhansen@physislabs.com

PROJECT SAMPLE LIST

Tetra Tech, Inc.

PHYSIS Project ID: 2107007-003

T423.11

Total Samples: 12

PHYSIS ID	Sample ID	Description	Date	Time	Matrix	Sample Type
96479	CBREF-SW-1		3/24/2022	17:08	Samplewater	Not Specified
96480	CBREF-SW-20		3/24/2022	17:17	Samplewater	Not Specified
96481	CBREF-SW-40		3/24/2022	17:29	Samplewater	Not Specified
96482	CBREF-SW-B		3/24/2022	17:40	Samplewater	Not Specified
96483	WPWB-1B2Y-SW-1		3/24/2022	7:16	Samplewater	Not Specified
96484	WPWB-1B2Y-SW-20		3/24/2022	7:29	Samplewater	Not Specified
96485	WPWB-1B2Y-SW-40		3/24/2022	7:39	Samplewater	Not Specified
96486	WPWB-1B2Y-SW-B		3/24/2022	7:52	Samplewater	Not Specified
96487	WPWB-3B2X-SW-1		3/24/2022	4:19	Samplewater	Not Specified
96488	WPWB-3B2X-SW-20		3/24/2022	4:27	Samplewater	Not Specified
96489	WPWB-3B2X-SW-40		3/24/2022	4:37	Samplewater	Not Specified
96490	WPWB-3B2X-SW-B		3/24/2022	4:50	Samplewater	Not Specified

ABBREVIATIONS and ACRONYMS

QM	Quality Manual
QA	Quality Assurance
QC	Quality Control
MDL	method detection limit
RL	reporting limit
R1	project sample
R2	project sample replicate
MS1	matrix spike
MS2	matrix spike replicate
B1	procedural blank
B2	procedural blank replicate
BS1	blank spike
BS2	blank spike replicate
LCS1	laboratory control spike
LCS2	laboratory control spike replicate
LCM1	laboratory control material
LCM2	laboratory control material replicate
CRM1	certified reference material
CRM2	certified reference material replicate
RPD	relative percent difference
LMW	low molecular weight
HMW	high molecular weight

QUALITY ASSURANCE SUMMARY

LABORATORY BATCH: Physis' QM defines a laboratory batch as a group of 20 or fewer project samples of similar matrix, processed together under the same conditions and with the same reagents. QC samples are associated with each batch and were used to assess the validity of the sample analyses.

PROCEDURAL BLANK: Laboratory contamination introduced during method use is assessed through the preparation and analysis of procedural blanks is provided at a minimum frequency of one per batch.

ACCURACY: Accuracy of analytical measurements is the degree of closeness based on percent recovery calculations between measured values and the actual or true value and includes a combination of reproducibility error and systematic bias due to sampling and analytical operations. Accuracy of the project data was indicated by analysis of MS, BS, LCS, LCM, CRM, and/or surrogate spikes on a minimum frequency of one per batch. Physis' QM requires that 95% of the target compounds greater than 10 times the MDL be within the specified acceptance limits.

PRECISION: Precision is the agreement among a set of replicate measurements without assumption of knowledge of the true value and is based on RPD calculations between repeated values. Precision of the project data was determined by analysis of replicate MS1/MS2, BS1/BS2, LCS1/LCS2, LCM1/LCM2, CRM1/CRM2, surrogate spikes and/or replicate project sample analysis (R1/R2) on a minimum frequency of one per batch. Physis' QM requires that for 95% of the compounds greater than 10 times the MDL, the percent RPD should be within the specified acceptance range.

BLANK SPIKES: BS is the introduction of a known concentration of analyte into the procedural blank. BS demonstrates performance of the preparation and analytical methods on a clean matrix void of potential matrix related interferences. The BS is performed in laboratory deionized water, making these recoveries a better indicator of the efficiency of the laboratory method per se.

MATRIX SPIKES: MS is the introduction of a known concentration of analyte into a sample. MS samples demonstrate the effect a particular project sample matrix has on the accuracy of a measurement. Individually, MS samples also indicate the bias of analytical measurements due to chemical interferences inherent in the in the specific project sample spiked. Intrinsic target analyte concentration in the specific project sample can also significantly impact MS recovery.

CERTIFIED REFERENCE MATERIALS: CRMs are materials of various matrices for which analytical information has been determined and certified by a recognized authority. These are used to provide a quantitative assessment of the accuracy of an analytical method. CRMs provide evidence that the laboratory preparation and analysis produces results that are comparable to those obtained by an independent organization.

LABORATORY CONTROL MATERIAL: LCM is provided because a suitable natural seawater CRM is not available and can be used to indicate accuracy of the method. Physis' internal LCM is seawater collected at ~800 meters in the Southern California San Pedro Basin and can be used as a reference for background concentrations in clean, natural seawater for comparison to project samples.

LABORATORY CONTROL SPIKES: LCS is the introduction of a known concentration of analyte into Physis' LCM. LCS samples were employed to assess the effect the seawater matrix has on the accuracy of a measurement. LCS also indicate the bias of this method due to chemical interferences inherent in the in the seawater matrix. Intrinsic LCM concentration can also significantly impact LCS recovery.

SURROGATES: A surrogate is a pure analyte unlikely to be found in any project sample, behaves similarly to the target analyte and most often used with organic analytical procedures. Surrogates are added in known concentration to all samples and are measured to indicate overall efficiency of the method including processing and analyses.

HOLDING TIME: Method recommended holding times are the length of time a project sample can be stored under specific conditions after collection and prior to analysis without significantly affecting the analyte's concentration. Holding times can be extended if preservation techniques are employed to reduce biodegradation, volatilization, oxidation, sorption, precipitation, and other physical and chemical processes.

SAMPLE STORAGE/RETENTION: In order to maintain chemical integrity prior to analysis, all samples submitted to Physis are refrigerated (liquids) or frozen (solids) upon receipt unless otherwise recommended by applicable methods. Solid samples are retained for 1 year from collection while liquid samples are retained until method recommended holding times elapse.

TOTAL/DISSOLVED FRACTION: In some instances, the results for the dissolved fraction may be higher than the total fraction for a particular analyte (e.g. trace metals). This is typically caused by the analytical variation for each result and indicates that the target analyte is primarily in the dissolved phase, within the sample.

PHYSIS QUALIFIER CODES

CODE	DEFINITION
#	see Case Narrative
ND	analyte not detected at or above the MDL
B	analyte was detected in the procedural blank greater than 10 times the MD
E	analyte concentration exceeds the upper limit of the linear calibration range, reported value is estimated
H	sample received and/or analyzed past the recommended holding time
J	analyte was detected at a concentration below the RL and above the MDL, reported value is estimated
N	insufficient sample, analysis could not be performed
M	analyte was outside the specified accuracy and/or precision acceptance limits due to matrix interference. The associated B/BS were within limits, therefore the sample data was reported without further clarification
SH	analyte concentration in the project sample exceeded the spike concentration, therefore accuracy and/or precision acceptance limits do not apply
SL	analyte results were lower than 10 times the MDL, therefore accuracy and/or precision acceptance limits do not apply
NH	project sample was heterogeneous and sample homogeneity could not be readily achieved using routine laboratory practices, therefore accuracy and/or precision acceptance limits do not apply
Q	analyte was outside the specified QAPP acceptance limits for precision and/or accuracy but within Physis derived acceptance limits, therefore the sample data was reported without further clarification
R	Physis' QM allows for 5% of the target compounds greater than 10 times the MDL to be outside the specified acceptance limits for precision and/or accuracy. This is often due to random error and does not indicate any significant problems with the analysis of these project samples

ANALYTICAL

REPORT

TERRA

AURA

ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Conventionals

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 96479-R1	CBREF-SW-1		Matrix: Samplewater				Sampled: 24-Mar-22 17:08			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96480-R1	CBREF-SW-20		Matrix: Samplewater				Sampled: 24-Mar-22 17:17			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96481-R1	CBREF-SW-40		Matrix: Samplewater				Sampled: 24-Mar-22 17:29			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96482-R1	CBREF-SW-B		Matrix: Samplewater				Sampled: 24-Mar-22 17:40			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96483-R1	WPWB-1B2Y-SW-1		Matrix: Samplewater				Sampled: 24-Mar-22 7:16			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96484-R1	WPWB-1B2Y-SW-20		Matrix: Samplewater				Sampled: 24-Mar-22 7:29			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96485-R1	WPWB-1B2Y-SW-40		Matrix: Samplewater				Sampled: 24-Mar-22 7:39			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96486-R1	WPWB-1B2Y-SW-B		Matrix: Samplewater				Sampled: 24-Mar-22 7:52			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96487-R1	WPWB-3B2X-SW-1		Matrix: Samplewater				Sampled: 24-Mar-22 4:19			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96488-R1	WPWB-3B2X-SW-20		Matrix: Samplewater				Sampled: 24-Mar-22 4:27			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22
Sample ID: 96489-R1	WPWB-3B2X-SW-40		Matrix: Samplewater				Sampled: 24-Mar-22 4:37			Received: 21-Apr-22	
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22

Conventionals

ANALYTE	Method	Units	RESULT	DF	MDL	RL	Fraction	QA CODE	Batch ID	Date Processed	Date Analyzed
Sample ID: 96490-R1	WPWB-3B2X-SW-B		Matrix: Samplewater				Sampled:	24-Mar-22 4:50		Received:	21-Apr-22
Total Organic Carbon	SM 5310 B	mg/L	ND	1	0.2	0.44	NA		O-37026	22-Apr-22	22-Apr-22

PHYSIS

QUALITY CONTROL REPORT

TERRA FUSION AQUA AURA
ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Conventionals

QUALITY CONTROL REPORT

SAMPLE ID	BATCH ID	RESULT	DF	MDL	RL	UNITS	SPIKE LEVEL	SOURCE RESULT	ACCURACY %	PRECISION %	QA CODE
									LIMITS	LIMITS	
Total Organic Carbon		Method: SM 5310 B		Fraction: NA		Prepared: 22-Apr-22		Analyzed: 22-Apr-22			
96478-B1	QAQC Procedural Blank	O-37026	ND	1	0.2	0.44	mg/L				
96478-BS1	QAQC Procedural Blank	O-37026	96	1	0.2	0.44	mg/L	0	96	63 - 133% PASS	
96478-BS2	QAQC Procedural Blank	O-37026	97	1	0.2	0.44	mg/L	0	97	63 - 133% PASS	1 30 PASS
96483-MS1	WPWB-1B2Y-SW-1	O-37026	83	1	0.2	0.44	mg/L	0	83	68 - 132% PASS	
96483-MS2	WPWB-1B2Y-SW-1	O-37026	82	1	0.2	0.44	mg/L	0	82	68 - 132% PASS	1 30 PASS
96483-R2	WPWB-1B2Y-SW-1	O-37026	ND	1	0.2	0.44	mg/L			0 30 PASS	

CHAIN OF CUSTODY

TERRA FUSION AURA
ENVIRONMENTAL LABORATORIES, INC.

Innovative Solutions for Nature

Ship to:
Rich Gossett
Physis Labs
1904 East Wright Circle
Anaheim, CA 92806

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd.
Lafayette, CA
ted.donn@tetratech.com

General Notes:

Please report results separately for each Project ID
Please report all results to the MDL, J-flag results between MDL and RL
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

Project ID	SampleID	Date	Time	Medium	Preservation	TOC (SM 5310 B)
T423.11	CBREF-SW-1	3/24/2022	17:08	SW	H2SO4	1
T423.11	CBREF-SW-20	3/24/2022	17:17	SW	H2SO4	1
T423.11	CBREF-SW-40	3/24/2022	17:29	SW	H2SO4	1
T423.11	CBREF-SW-B	3/24/2022	17:40	SW	H2SO4	1
T423.11	WPWB-1B2Y-SW-1	3/24/2022	7:16	SW	H2SO4	1
T423.11	WPWB-1B2Y-SW-20	3/24/2022	7:29	SW	H2SO4	1
T423.11	WPWB-1B2Y-SW-40	3/24/2022	7:39	SW	H2SO4	1
T423.11	WPWB-1B2Y-SW-B	3/24/2022	7:52	SW	H2SO4	1
T423.11	WPWB-3B2X-SW-1	3/24/2022	4:19	SW	H2SO4	1
T423.11	WPWB-3B2X-SW-20	3/24/2022	4:27	SW	H2SO4	1
T423.11	WPWB-3B2X-SW-40	3/24/2022	4:37	SW	H2SO4	1
T423.11	WPWB-3B2X-SW-B	3/24/2022	4:50	SW	H2SO4	1

Relinquished by:

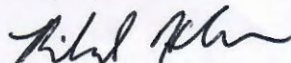


31 MAR 22

Relinquished by:

Received by:

Richard L. Hanken



4/21/22

Received by:

Project Iteration ID: 2107007-003
Client Name: Tetra Tech, Inc.
Project Name: T423.11
COC Page Number: 2 of 2
Bottle Label Color: NA

Sample Receipt Summary

Receiving Info

1. Initials Received By: RGH
2. Date Received: 4/21/22
3. Time Received: 1010
4. Client Name: Tetra Tech
5. Courier Information: (Please circle)
 - Client
 - RedEx
 - UPS
 - GSO/GLS
 - Area Fast
 - Ontrac
 - DRS
 - PAMS
6. Container Information: (Please put the # of containers or circle none)
 - 1 Cooler
 - 1 Styrofoam Cooler
 - 1 Boxes
 - None
 - 1 Carboy(s)
 - 1 Carboy Trash Can(s)
 - 1 Carboy Cap(s)
 - Other
7. What type of ice was used: (Please circle any that apply)
 - Wet Ice
 - Blue Ice
 - Dry Ice
 - Water
 - None
8. Randomly Selected Samples Temperature (°C): -6.3

iii. Total Mileage: _____
iv. Number of Pickups: _____

Used I/R Thermometer # 1-2

Inspection Info

1. Initials Inspected By: RGH

Sample Integrity Upon Receipt:

1. COC(s) included and completely filled out..... Yes / No
2. All sample containers arrived intact..... Yes / No
3. All samples listed on COC(s) are present..... Yes / No
4. Information on containers consistent with information on COC(s)..... Yes / No
5. Correct containers and volume for all analyses indicated..... Yes / No
6. All samples received within method holding time..... Yes / No
7. Correct preservation used for all analyses indicated..... Yes / No
8. Name of sampler included on COC(s)..... Yes / No

Notes:

water samples received frozen.

APPENDIX C
ANALYTICAL LABORATORY REPORTS:
BENTHIC COMMUNITY

Benthos diversity (individuals per 0.04 square meter)

TAXA	WPWB- 1B2Y	WPWB- 1C2	WPWB- 1D2	WPWB- 2B1X	WPWB- 2C2	WPWB- 3B2X	WPWB- 3C2
Nemertea							
Anopla							
Heteronemertea							
Lineidae							
<i>Lineus</i> sp.1					1		
<i>Micrura</i> sp.1		1					
Palaeonemertea							
Tubulanidae							
<i>Callinera</i> sp.1						1	
Sipuncula							
Phascolosomatidea							
Phascolosomatiformes							
Phascolosomatidae							
<i>Apionsoma</i> sp.2	1						
Sipunculidea							
Golfingiformes							
Phascolionidae							
<i>Phascolion</i> sp.1							
Annelida							
Polychaeta							
Aciculata							
Amphinomidae							
<i>Chloeia violacea</i>					1	1	1
Dorvilleidae							
<i>Schistomeringos</i> sp.1	24						
Eunicidae							
<i>Euniphysa</i> sp.1		1				2	1
Glyceridae							
<i>Glycera alba</i>							
<i>Glycera</i> sp.							
Hartmaniellidae							
<i>Hartmaniella</i> sp.1		1					
Lumbrineridae							
<i>Gallardoneris thailandensis</i>							
<i>Geseneris</i> sp.1						1	
<i>Loboneris</i> sp.1							
<i>Lumbrinerides</i> sp.1							
<i>Lumbrineris latreilli</i>	1						
<i>Ninoe nr. bruuni</i>		2					
Nephtyidae							
<i>Aglaophamus cf. dicirroides</i>	1			1	1	2	
<i>Aglaophamus orientalis</i>		1					3
<i>Aglaophamus tepens</i>							
Nereididae							
<i>Leonnates persicus</i>							1
<i>Neanthes arenaceodentata</i>	1						
<i>Tambalagamia fauveli</i>							2
Onuphidae							
<i>Onuphis</i> sp.1						1	
Paralacydoniidae							
<i>Paralacydonia</i> sp.1							
Pilargidae							
<i>Cabira thailandica</i>					1		
<i>Sigambra</i> sp.						2	
<i>Sigambra</i> sp.1				1			
<i>Synelmis albin</i>			1	1	1		
<i>Synelmis rigida</i>					3		2
Polynoidae							
<i>Harmothoe</i> sp.				1			2
Sigalionidae							
<i>Leanira</i> sp.1							



Sakman Phong

Benthos diversity (individuals per 0.04 square meter)

TAXA	WPWB- 1B2Y	WPWB- 1C2	WPWB- 1D2	WPWB- 2B1X	WPWB- 2C2	WPWB- 3B2X	WPWB- 3C2
<i>Sthenolepis</i> sp.2	1						1
Syllidae							
<i>Exogone (Exogone)</i> sp.1						1	
<i>Sphaerosyllis</i> sp.1							1
Canalipalpata							
Ampharetidae							
<i>Anobothrus</i> sp.1						1	1
Chaetopteridae							
<i>Chaetopterus</i> sp.							
<i>Spiochaetopterus</i> sp.1			1			1	3
Cirratulidae							
<i>Aphelochaeta monilaris</i>					1		
<i>Aphelochaeta</i> sp.1					1		1
<i>Chaetozone</i> sp.1				1			
<i>Kirkegaardia</i> sp.1				1		1	1
<i>Kirkegaardia</i> sp.3		1					
<i>Kirkegaardia</i> sp.6							
Flabelligeridae							
<i>Diplocirrus</i> sp.1		1					
Magelonidae							
<i>Magelona</i> sp.13							2
Spionidae							
<i>Prionospio ehlersi</i>							
<i>Prionospio elegantula</i>						2	
<i>Prionospio elongata</i>							1
<i>Prionospio</i> sp.						2	
<i>Spiophanes</i> sp.3							
Sternaspidae							
<i>Cauleryaspis</i> sp.1			1				
<i>Sternaspis cf. spinosa</i>						1	
Terebellidae							
<i>Amaeana nr. antipoda</i>							
<i>Amaeana</i> sp.							
Trichobranchidae							
<i>Terebellides</i> sp.1		2					
<i>Terebellides</i> sp.2							1
Capitellidae							
<i>Capitella capitata oculata</i>	1						
<i>Capitellethus</i> sp.1		1					
<i>Capitellethus</i> sp.2		1					
<i>Neomediomastus</i> sp.1		1					1
<i>Neomediomastus</i> sp.2				1	1		
<i>Promastobranchus hultoti</i>					1	2	
<i>Rashgua lobatus</i>							1
Cossuridae							
<i>Cossura</i> sp.2							
Maldanidae							
<i>Clymenella</i> sp.1							1
<i>Clymenura</i> sp.1				1			
<i>Euclymene</i> sp.1							1
<i>Euclymene</i> sp.3							
Maldanidae							
<i>Praxillella nr. gracilis</i>		1					
Opheliidae							
<i>Ophelina cf. cordiformis</i>	1						
Paraonidae							
<i>Aricidea (Aricidea)</i> sp.8					1		
<i>Levinsenia</i> sp.						3	
<i>Levinsenia</i> sp.1					1		



Benthos diversity (individuals per 0.04 square meter)

TAXA	WPWB- 1B2Y	WPWB- 1C2	WPWB- 1D2	WPWB- 2B1X	WPWB- 2C2	WPWB- 3B2X	WPWB- 3C2
<i>Levinsenia</i> sp.2					1		
<i>Levinsenia</i> sp.9						2	
<i>Paradoneis</i> sp.							1
Arthropoda							
Crustacea							
Amphipoda							
Ampeliscidae							
<i>Ampelisca bocki</i>	1						1
<i>Ampelisca cyclops</i>					1	1	
<i>Ampelisca</i> sp.							
<i>Byblis calisto</i>				1			1
<i>Byblis febris</i>							2
<i>Byblis</i> sp.							2
Caprellidae							
<i>Caprella</i> sp.1							
Eriopisidae							
Eriopisidae							
<i>Victoriopisa</i> sp.1							
Ischyroceridae							
<i>Erichthonius brasiliensis</i>						3	1
Oedicerotidae							
<i>Eochelidium nonmiraculum</i>			1				
Photidae							
<i>Gammaropsis</i> sp.2			1				
<i>Gammaropsis</i> sp.4							
<i>Photis kapapa</i>							
<i>Photis longicaudata</i>	1						1
Phoxocephalidae							
<i>Parametaphoxus</i> sp.1				1			
Sebidae							
<i>Seba</i> sp.1	15						
Tryphosidae							
<i>Tryphosella</i> sp.1		1					
Urothoidae							
<i>Urothoe</i> sp.					1		
Cumacea							
Diastylidae							
<i>Diastylis</i> sp.2							
Nannastacidae							
<i>Campylaspis</i> sp.2							
<i>Campylaspis</i> sp.5					1		
Decapoda							
Alpheidae							
<i>Alpheus acutocarinatus</i>		1					
<i>Alpheus malabaricus</i>							
<i>Alpheus paracrinitus</i>	1						
<i>Alpheus</i> sp.							
<i>Athanas</i> sp.						1	
<i>Bermudacaris</i> sp.						1	
<i>Bermudacaris</i> sp.1							1
Calappidae							
<i>Calappa</i> sp.							1
Callianassidae							
<i>Callianassa</i> sp.							
<i>Jocullianassa matzi</i>		1					
<i>Lipkecallianassa</i> sp.1			1		1		3
Palaemonidae							
<i>Palaemon</i> sp.1							
Pasiphaeidae							
<i>Leptochela pugnax</i>					1		
Pilumnidae							



Sakamon P. Hong

Benthos diversity (individuals per 0.04 square meter)

TAXA	WPWB- 1B2Y	WPWB- 1C2	WPWB- 1D2	WPWB- 2B1X	WPWB- 2C2	WPWB- 3B2X	WPWB- 3C2
<i>Ceratoplax fulgida</i>							
Upogebiidae							
<i>Gebiakantha laurentae</i>				1			
<i>Gebiakantha</i> sp.1							
Isopoda							
Anthuridae							
<i>Amakusanthura</i> sp.2	2						
<i>Haliophasma</i> sp.1	1						
Gnathiidae							
<i>Caecognathia andamanensis</i>							3
Munnidae							
<i>Munnidae</i> sp.1							1
Leptostraca							
Nebaliidae							
<i>Nebalia</i> sp.1							
Mysidacea							
Mysidae							
<i>Haplostylus bengalensis</i>			1				
Stomatopoda							
Squillidae							
<i>Cloridina verrucosa</i>					1		
Echinodermata							
Ophiuroidea							
Ophiurida							
Amphiuridae							
<i>Amphioplus (Lymanella) andreae</i>							
<i>Amphioplus</i> sp.1			1			1	1
<i>Amphiura</i> sp.3	1						
<i>Amphiuridae</i> sp.1							
<i>Amphiuridae</i> sp.2						1	
Mollusca							
Aplacophora							
Cavibelonia							
Simrothiellidae							
<i>Helicoradomenia</i> sp.1							
<i>Helicoradomenia</i> sp.2							
Chaetodermatida							
Chaetodermatidae							
<i>Chaetoderma</i> sp.3		1					
Bivalvia							
Lucinida							
Lucinidae							
<i>Cavatidens imajimai</i>	27						
Nuculoida							
Nuculidae							
<i>Ennucula niponica</i>							1
Scaphopoda							
Dentaliida							
Laevidentaliidae							
<i>Laevidentalium eburneum</i>						1	
<i>Laevidentalium</i> sp.					1		
Total	80	18	8	11	22	35	48
Number of Taxa	16	16	8	11	20	24	34



Benthos diversity (individuals per 0.04 square

TAXA	WPWB- 3D2	WPWB- 4B1X	WPWB- 4C2	CBREF- A1	CBREF- B1	CBREF- C1
Nemertea						
Anopla						
Heteronemertea						
Lineidae						
<i>Lineus</i> sp.1						
<i>Micrura</i> sp.1						
Palaeonemertea						
Tubulanidae						
<i>Callinera</i> sp.1					1	
Sipuncula						
Phascolosomatidea						
Phascolosomatiformes						
Phascolosomatidae						
<i>Apionsoma</i> sp.2	1	1	1		1	2
Sipunculidea						
Golfingiformes						
Phascolionidae						
<i>Phascolion</i> sp.1	1					
Annelida						
Polychaeta						
Aciculata						
Amphinomidae						
<i>Chloeia violacea</i>				1		1
Dorvilleidae						
<i>Schistomeringos</i> sp.1						
Eunicidae						
<i>Euniphysa</i> sp.1						
Glyceridae						
<i>Glycera alba</i>					1	
<i>Glycera</i> sp.			1	1		
Hartmaniellidae						
<i>Hartmaniella</i> sp.1						
Lumbrineridae						
<i>Gallardoneris thailandensis</i>					1	
<i>Geseneris</i> sp.1						
<i>Loboneris</i> sp.1			1			
<i>Lumbrinerides</i> sp.1					1	
<i>Lumbrineris latreilli</i>						
<i>Ninoe nr. bruuni</i>						
Nephtyidae						
<i>Aglaophamus cf. diciroides</i>		1			2	1
<i>Aglaophamus orientalis</i>	1		1	1	1	
<i>Aglaophamus tepens</i>				1		
Nereididae						
<i>Leonnates persicus</i>						
<i>Neanthes arenaceodentata</i>						
<i>Tambalagamia fauveli</i>	1					
Onuphidae						
<i>Onuphis</i> sp.1	1					
Paralacydoniidae						
<i>Paralacydonia</i> sp.1			1			
Pilargidae						
<i>Cabira thailandica</i>						
<i>Sigambra</i> sp.						
<i>Sigambra</i> sp.1	1					
<i>Synelmis albin</i>	1				1	
<i>Synelmis rigida</i>	2		8		1	
Polynoidae						
<i>Harmothoe</i> sp.						
Sigalionidae						
<i>Leanira</i> sp.1	1					



Sakman Phong

Benthos diversity (individuals per 0.04 square

TAXA	WPWB- 3D2	WPWB- 4B1X	WPWB- 4C2	CBREF- A1	CBREF- B1	CBREF- C1
<i>Sthenolepis</i> sp.2			1			
Syllidae						
<i>Exogone (Exogone)</i> sp.1						
<i>Sphaerosyllis</i> sp.1						
Canalipalpata						
Ampharetidae						
Ampharetidae	1					
<i>Anobothrus</i> sp.1						
Chaetopteridae						
<i>Chaetopterus</i> sp.	1	1				
<i>Spiochaetopterus</i> sp.1				1		
Cirratulidae						
<i>Aphelochaeta monilaris</i>						
<i>Aphelochaeta</i> sp.1						
<i>Chaetozone</i> sp.1						
<i>Kirkegaardia</i> sp.1			1			
<i>Kirkegaardia</i> sp.3						
<i>Kirkegaardia</i> sp.6						1
Flabelligeridae						
<i>Diplocirrus</i> sp.1						
Magelonidae						
<i>Magelona</i> sp.13		1				
Spionidae						
<i>Prionospio ehlersi</i>			1			
<i>Prionospio elegantula</i>				1		
<i>Prionospio elongata</i>						
<i>Prionospio</i> sp.						
<i>Spiophanes</i> sp.3			1			
Sternaspidae						
<i>Caulleryaspis</i> sp.1						
<i>Sternaspis cf. spinosa</i>						
Terebellidae						
<i>Amaeana nr. antipoda</i>	1					
<i>Amaeana</i> sp.				1		
Trichobranchidae						
<i>Terebellides</i> sp.1		1		1		
<i>Terebellides</i> sp.2						
Capitellidae						
<i>Capitella capitata oculata</i>						
<i>Capitellethus</i> sp.1						
<i>Capitellethus</i> sp.2						
<i>Neomediomastus</i> sp.1	1					
<i>Neomediomastus</i> sp.2						
<i>Promastobranchus huloti</i>						
<i>Rashgua lobatus</i>						
Cossuridae						
<i>Cossura</i> sp.2					1	
Maldanidae						
<i>Clymenella</i> sp.1						
<i>Clymenura</i> sp.1						
<i>Euclymene</i> sp.1						
<i>Euclymene</i> sp.3			1			
Maldanidae						1
<i>Praxillella nr. gracilis</i>			1	1		
Opheliidae						
<i>Ophelina cf. cordiformis</i>						
Paraonidae						
<i>Aricidea (Aricidea)</i> sp.8						
<i>Levinsenia</i> sp.						
<i>Levinsenia</i> sp.1				1	1	



Sakman Phong

Benthos diversity (individuals per 0.04 square

TAXA	WPWB- 3D2	WPWB- 4B1X	WPWB- 4C2	CBREF- A1	CBREF- B1	CBREF- C1
<i>Levinseria</i> sp.2						
<i>Levinseria</i> sp.9						
<i>Paradoneis</i> sp.						
Arthropoda						
Crustacea						
Amphipoda						
Ampeliscidae						
<i>Ampelisca bocki</i>		1		1		
<i>Ampelisca cyclops</i>						
<i>Ampelisca</i> sp.					1	
<i>Byblis calisto</i>						
<i>Byblis febris</i>				2		
<i>Byblis</i> sp.	1					
Caprellidae						
<i>Caprella</i> sp.1	2		1			
Eriopisidae						
<i>Eriopis</i> sp.						1
<i>Victoriopisa</i> sp.1			1			
Ischyroceridae						
<i>Erichthonius brasiliensis</i>						
Oedicerotidae						
<i>Eochelidium nonmiraculum</i>						
Photidae						
<i>Gammaropsis</i> sp.2						
<i>Gammaropsis</i> sp.4			1			
<i>Photis kapapa</i>				2		
<i>Photis longicaudata</i>						
Phoxocephalidae						
<i>Parametaphoxus</i> sp.1						
Sebidae						
<i>Seba</i> sp.1						
Tryphosidae						
<i>Tryphosella</i> sp.1						
Urothoidae						
<i>Urothoe</i> sp.						
Cumacea						
Diastylidae						
<i>Diastylis</i> sp.2	1					
Nannastacidae						
<i>Campylaspis</i> sp.2				1		
<i>Campylaspis</i> sp.5						
Decapoda						
Alpheidae						
<i>Alpheus acutocarinatus</i>						
<i>Alpheus malabaricus</i>		1				
<i>Alpheus paracrinatus</i>						
<i>Alpheus</i> sp.		1				
<i>Athanas</i> sp.						
<i>Bermudacaris</i> sp.				1	1	
<i>Bermudacaris</i> sp.1		1				
Calappidae						
<i>Calappa</i> sp.						
Callianassidae						
<i>Callianassa</i> sp.					2	1
<i>Jocullianassa matzi</i>						
<i>Lipkecallianassa</i> sp.1	2		5	3		1
Palaemonidae						
<i>Palaemon</i> sp.1		1				
Pasiphaeidae						
<i>Leptochela pugnax</i>						
Pilumnidae						



Benthos diversity (individuals per 0.04 square

TAXA	WPWB- 3D2	WPWB- 4B1X	WPWB- 4C2	CBREF- A1	CBREF- B1	CBREF- C1
<i>Ceratoplax fulgida</i>		1				
Upogebiidae						
<i>Gebiakantha laurentae</i>						
<i>Gebiakantha</i> sp.1		1				
Isopoda						
Anthuridae						
<i>Amakusanthura</i> sp.2						
<i>Haliophasma</i> sp.1						
Gnathiidae						
<i>Caecognathia andamanensis</i>				1	1	
Munnidae						
Munnidae sp.1						
Leptostraca						
Nebaliidae						
<i>Nebalia</i> sp.1				1		
Mysidacea						
Mysidae						
<i>Haplostylus bengalensis</i>						
Stomatopoda						
Squillidae						
<i>Cloridina verrucosa</i>	1				1	
Echinodermata						
Ophiuroidea						
Ophiurida						
Amphiuridae						
<i>Amphioplus (Lymanella) andreae</i>		1				
<i>Amphioplus</i> sp.1					1	1
<i>Amphiura</i> sp.3						
Amphiuridae sp.1			1			
Amphiuridae sp.2						
Mollusca						
Aplacophora						
Cavibelonia						
Simrothiellidae						
<i>Helicoradomenia</i> sp.1			1			
<i>Helicoradomenia</i> sp.2					1	1
Chaetodermatida						
Chaetodermatidae						
<i>Chaetoderma</i> sp.3						
Bivalvia						
Lucinida						
Lucinidae						
<i>Cavatidens imajimai</i>						
Nuculoida						
Nuculidae						
<i>Ennucula niponica</i>						
Scaphopoda						
Dentaliida						
Laevidentaliidae						
<i>Laevidentalium eburneum</i>						
<i>Laevidentalium</i> sp.						
Total	21	13	29	22	20	11
Number of Taxa	18	13	18	18	18	10



APPENDIX D
ANALYTICAL LABORATORY REPORTS:
PHYTOPLANKTON COMMUNITY

Phytoplankton density (Individuals per 100 L.)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
Charophyta			
Conjugophyceae			
Desmiales			
Desmidiaceae			
<i>Staurastrum</i> sp.1			60
<i>Staurastrum</i> sp.3		240	
Chlorophyta			
Chlorophyceae			
Tetrasporales			
Palmellopsidaceae			
<i>Sphaerocystis</i> sp.1			2160
Chrysophyta			
Chrysophyceae			
Dictyochales			
Dictyochaceae			
<i>Dictyocha fibula</i>	300	1020	480
Cyanobacteria			
Cyanophyceae			
Chroococcales			
Chroococcaceae			
<i>Gloeocapsa</i> sp.1	1080		
Nostocales			
Oscillatoriaceae			
<i>Oscillatoria erythraea</i>	105420	168780	30000
<i>Oscillatoria</i> sp.1	69300	117960	13380
<i>Oscillatoria</i> sp.2	1020	19200	
<i>Oscillatoria thiebautii</i>		360	
Rivulariaceae			
<i>Calothrix crustacea</i>		960	240
Ochromphyta			
Bacillariophyceae			
Asterolamprales			
Asterolampraceae			
<i>Asterolampra marylandica</i>	360	600	300
<i>Asteromphalus cleveanus</i>	720	420	
<i>Asteromphalus elegans</i>	300	480	240
<i>Asteromphalus</i> sp.1	360	420	120
Bacillariales			
Bacillariaceae			
<i>Cylindrotheca</i> sp.1		780	1140
<i>Nitzschia lorenziana</i>	1380		60
<i>Nitzschia</i> sp.3	1200	960	480
<i>Nitzschia</i> sp.4	420	420	240
<i>Pseudo-nitzschia</i> sp.1	420		420
Centrales			
Eupodiscaceae			
<i>Odontella sinensis</i>		240	
Chaetocerotales			
Chaetocerotaceae			
<i>Bacteriastrum furcatum</i>	600	1860	1200
<i>Bacteriastrum hyalinum</i>	1200	1920	1140
<i>Chaetoceros coarctatus</i>		1200	
<i>Chaetoceros didymus</i>			2280
<i>Chaetoceros massanensis</i>	540	1080	
Coscinodiscales			
Coscinodiscaceae			
<i>Coscinodiscus</i> sp.1	180	240	180



Sakamon P. H.

Phytoplankton density (Individuals per 100 L.)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
<i>Coscinodiscus</i> sp.10	600	780	1140
<i>Coscinodiscus</i> sp.12			600
<i>Coscinodiscus</i> sp.2	660	660	540
<i>Coscinodiscus</i> sp.6		420	
<i>Coscinodiscus</i> sp.8	360	600	480
<i>Gossleriella tropica</i>	1380	300	
Heliopeltaceae			
<i>Actinoptychus</i> sp.1	180	420	
Fragilariiales			
Fragilariaceae			
<i>Fragilaria</i> sp.1	840		
Hemiaulales			
Hemiaulaceae			
<i>Climacodium biconcavum</i>	2160	780	1260
<i>Climacodium frauenfeldianum</i>	840		
<i>Hemiaulus indicus</i>	780	1080	600
<i>Hemiaulus membranaceus</i>	660	780	420
Hemiaulaceae			
<i>Eucampia cornuta</i>			180
<i>Eucampia zodiacus</i>		600	
Naviculales			
Diploneidaceae			
<i>Diploneis</i> sp.1	960		300
Naviculaceae			
<i>Haslea</i> sp.1	1260	2100	1320
<i>Haslea wawrikan</i>		1860	
<i>Meuniera</i> sp.1		1680	
<i>Navicula</i> sp.2	2220	2640	1620
<i>Navicula</i> sp.3		480	
<i>Navicula</i> sp.4		480	
<i>Trachyneis</i> sp.1	420	840	300
Pinnulariaceae			
<i>Pinnularia</i> sp.2	600	480	60
Pleurosigmataceae			
<i>Gyrosigma</i> sp.1	780	720	600
<i>Gyrosigma</i> sp.2	420	540	120
<i>Gyrosigma</i> sp.3	180	780	
<i>Pleurosigma</i> sp.1	780	1440	480
<i>Pleurosigma</i> sp.2	540	3300	240
<i>Pleurosigma</i> sp.3	240	660	
<i>Pleurosigma</i> sp.4	1260	1980	120
<i>Pleurosigma</i> sp.5	180	420	
<i>Pleurosigma</i> sp.6	360	840	
Rhizosoleniales			
Rhizosoleniaceae			
<i>Dactyliosolen blavyanus</i>	360		
<i>Dactyliosolen fragilissimus</i>			120
<i>Dactyliosolen phuketensis</i>	540		
<i>Guinardia flaccida</i>			420
<i>Guinardia striata</i>	1020	2160	2520
<i>Proboscia alata</i>	1500	480	480
<i>Pseudosolenia calcar avis</i>	420	240	360
<i>Rhizosolenia hyalina</i>		420	
<i>Rhizosolenia robusta</i>	240		300
<i>Rhizosolenia</i> sp.2			240
<i>Rhizosolenia striata</i>			180
<i>Rhizosolenia styliformis</i>		780	
Surirellales			



Sakman Phung

Phytoplankton density (Individuals per 100 L.)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
Entomoneidaceae			
<i>Entomoneis</i> sp.1		660	480
Surirellaceae			
<i>Surirella</i> sp.1	240	600	
Thalassionematales			
Thalassionemataceae			
<i>Thalassionema nitzschioides</i>	2760	4920	3000
<i>Thalassionema</i> sp.1	2640	3540	1920
<i>Thalassiothrix</i> sp.1	1320	2280	720
<i>Thalassiothrix</i> sp.2	900	2640	900
Thalassioophysales			
Catenulaceae			
<i>Amphora</i> sp.2		1020	
Thalassiosirales			
Stephanodiscaceae			
<i>Cyclotella</i> sp.1	2580	2460	
Thalassiosiraceae			
<i>Planktoniella blanda</i>	1080	1440	
<i>Planktoniella sol</i>	480	840	
<i>Thalassiosira</i> sp.4		1080	660
<i>Thalassiosira</i> sp.6	420	1080	
Pyrrophyphyta			
Dinophyceae			
Dinophysiales			
Amphisoleniaceae			
<i>Amphisolenia bidentata</i>		1140	780
Dinophysiaceae			
<i>Dinophysis hastata</i>		120	
<i>Dinophysis schuettii</i>		240	180
<i>Histioneis hyalina</i>		180	
<i>Histioneis</i> sp.1		120	
<i>Phalacroma argus</i>	180		240
<i>Phalacroma cuneus</i>		180	
Gonyaulacales			
Ceratiaceae			
<i>Ceratium breve</i>	300		
<i>Ceratium claviger</i>		240	
<i>Ceratium contortum</i>		360	240
<i>Ceratium deflexum</i>			540
<i>Ceratium extensum</i>	180	300	
<i>Ceratium furca</i>			240
<i>Ceratium fusus</i>	240		
<i>Ceratium horridum</i>	420	480	120
<i>Ceratium trichoceros</i>	120	300	180
<i>Ceratium tripos</i>	180	480	180
Gonyaulacaceae			
<i>Gonyaulax</i> sp.1			60
<i>Lingulodinium</i> sp.1		420	300
Oxytoxaceae			
<i>Oxytoxum</i> sp.3	120	240	60
Pyrocystaceae	60	180	
<i>Pyrocystis lunula</i>	60	180	
Gymnodiniales			
Gymnodiniaceae			
<i>Gymnodinium</i> sp.1	60		
<i>Gymnodinium</i> sp.2			360
<i>Gymnodinium</i> sp.3	300	720	720



Sakman P. H.

Phytoplankton density (Individuals per 100 L.)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
<i>Gymnodinium</i> sp.6	300	720	
<i>Gymnodinium</i> sp.7			120
<i>Gyrodinium falcatum</i>		240	300
Peridinales			
Podolampadaceae			
<i>Podolampas palmipes</i>	120	300	180
<i>Podolampas spinifera</i>		240	180
Protopteridiniaceae			
<i>Protopteridinium asymmetricum</i>			240
<i>Protopteridinium depressum</i>	60		120
<i>Protopteridinium latispinum</i>	60		
<i>Protopteridinium</i> sp.18	120		60
<i>Protopteridinium</i> sp.6	60		
Prorocentrales			
Prorocentraceae			
<i>Prorocentrum</i> sp.3	300		
TOTAL	223200	380820	82200

1. Count as number of filaments

(average cells/unit of filamentous species) n=30

Filamentous phytoplankton species	Average (cells)	SD	Minimum (cells)	Maximum (cells)
<i>Spondylosium</i> sp.1	45.5	23.06	17	96
<i>Calothrix crustacea</i>	9.73	3.03	5	15
<i>Oscillatoria erythraea</i>	153.87	38.21	86	225
<i>Oscillatoria</i> sp.1	78.5	20.27	44	113
<i>Oscillatoria</i> sp.2	40.87	21.51	87	14

2. Count as number of colony (Unable to calculate cells/unit)

Oscillatoria thiebautii



Sakman P. H.

APPENDIX E
ANALYTICAL LABORATORY REPORTS:
ZOOPLANKTON COMMUNITY

Zooplankton density (individuals in the bottle)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
Cnidaria			
Anthozoa			
Anthozoa.unid			
Anthozoa.unid			
Anthozoa spp.			3
Hydrozoa			
Anthoathecata			
Proboscoidactylidae			
Proboscoidactylidae spp.	1	1	2
Hydrozoa.unid			
Hydrozoa.unid			
Hydrozoa spp.	2		
Leptothecatae			
Eirenidae			
<i>Eirene</i> sp.1			1
Siphonophorae			
Diphyidae			
Diphyidae spp.	2	3	3
Trachymedusae			
Geryoniidae			
<i>Liriope</i> sp.1		3	3
Annelida			
Polychaeta.unid			
Polychaeta.unid			
Polychaete larvae	7	15	15
Arthropoda			
Malacostraca			
Amphipoda			
Caprellidae			
Caprellidae sp.1			1
Caprellidae spp.	3	2	
Hyperiidae			
Hyperiidae sp.1	7	3	3
Hyperiidae sp.2	3	4	6
Hyperiidae sp.4	2	3	2
Oxycephalidae			
<i>Rhabdosoma</i> spp.	2	2	
Decapoda			
Alpheidae			
Alpheidae spp.		2	
Crangonidae			
Crangonidae			
Crangonidae spp.	1		
Dendrobranchiata.unid			
Shrimp larvae sp.C	1		
Shrimp larvae sp.J		2	2
Shrimp larvae sp.R	2		1
Diogenidae			
Diogenidae sp.1			1
Luciferidae			
Lucifer spp.	3	2	3
Paguridae			
Paguridae spp.	3		
Palaemonidae			
Palaemonidae			2
Pleocyemata.unid			
Brachyura Larvae	6	2	4
Upogebiidae			
Upogebiidae			
Upogebiidae spp.	2	1	



Sakam
Principal taxonomist

Zooplankton density (individuals in the bottle)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
Malacostraca.unid			
Malacostraca.unid			
<i>Mysid</i> sp.			2
Stomatopoda			
Squillaidae			
Alima larvae		1	
Stomatopoda.unid			
Erichthus larvae			1
Maxillopoda			
Calanoida			
Acartiidae			
Acartiidae spp.	24	34	80
Calanidae			
Calanidae spp.	106	207	170
Centropagidae			
Centropagidae spp.	28	45	61
Eucalanidae			
Eucalanidae spp.	77	112	122
Paracalanidae			
Paracalanidae spp.	21	27	8
Pontellidae			
Pontellidae spp.	12		18
Tortanidae			
Tortanidae spp.		16	
<i>Tortanus</i> spp.		4	
Harpacticoida			
Ectinosomatidae			
<i>Microsetella</i> spp.			3
Poecilostomatoida			
Sapphirinidae			
<i>Copilia</i> spp.		2	4
<i>Sapphirina</i> spp.	2	3	1
Ostracoda			
Halocyprida			
Halocyprididae			
<i>Euconchoecia</i> sp.1	14	11	12
Myodocopida			
Cypridinidae			
Cypridinidae sp.1	10	6	8
Cypridinidae sp.2	5	2	6
Echinodermata			
Echinodermata.unid			
Echinodermata.unid			
Echinodermata.unid			
Echinoderm Larvae	203	315	23
Mollusca			
Bivalvia			
Bivalvia.unid			
Bivalvia.unid			
Bivalve larvae	22		
<i>Bivalvia</i> sp.		15	26
Gastropoda			
Gastropoda.unid			
Gastropoda.unid			
Gastropoda	13	3	
Chaetognatha			
Sagittioidea			
Aphragmophora			
Sagittidae			
<i>Sagitta</i> spp.	66	80	160



Saksono P. H.
Principal taxonomist

Zooplankton density (individuals in the bottle)

STATION	WPWB-1B2Y	WPWB-3B2X	CBREF
Chordata			
Actinopterygii			
Actinopterygii.unid			
Actinopterygii.unid			
Fish Egg	16	6	11
Fish larvae	8	3	4
Appendicularia			
Copelata			
Oikopleuridae			
<i>Oikopleura</i> spp.	20	4	24
Thaliacea			
Doliolida			
Doliolidae			
<i>Doliolitta</i> spp.	4	4	2
Salpida			
Salpidae			
<i>Salpa</i> spp.	2	3	
TOTAL	700	948	802



APPENDIX F
ANALYTICAL LABORATORY REPORTS:
FISH ISSUE



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

18 February 2022

Theodore E. Donn, Jr, PhD
Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette, CA 94549
RE: Gulf of Thailand Tissues

Enclosed are the analytical results for samples received by Eurofins Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Patrick Garcia-Strickland". The signature is written in a cursive, flowing style.

Patrick Garcia-Strickland
Business Unit Manager



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CBWA-1121	2A00037-01	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1121-DUP	2A00037-02	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1181	2A00037-03	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1182	2A00037-04	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1183	2A00037-05	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1183-DUP	2A00037-06	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1184	2A00037-07	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1204	2A00037-08	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1205	2A00037-09	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1206	2A00037-10	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1207	2A00037-11	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1222	2A00037-12	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1244	2A00037-13	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1246	2A00037-14	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1247	2A00037-15	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1248	2A00037-16	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1249	2A00037-17	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1250	2A00037-18	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
CBWA-1563	2A00037-19	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

Eurofins Frontier Global Sciences, LLC

The results in this report only apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Patrick Garcia-Strickland, Business Unit Manager

Page 2 of 20

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

SAMPLE RECEIPT

Samples were received at Eurofins Frontier Global Sciences (EFGS) on 07-Jan-22 10:55. The samples were received intact.

SAMPLE PREPARATION AND ANALYSIS

Tissue samples were homogenized per EFGS SOP5141 prior to digestion.

Total mercury preparation and analysis was performed by flow injection atomic fluorescence spectrometry (FI-AFS) in accordance with EPA 1631B (EFGS SOP2822).

Trace metals preparation and analysis was performed by inductively coupled plasma mass spectrometry (ICP-MS) in accordance with EFGS SOP5135), a modified EPA 1638.

Samples were prepared and analyzed for inorganic arsenic speciation by hydride generation cryogenic trapping gas chromatography atomic absorption spectrometry (HG-CT-GC-AAS) in accordance with EPA 1632 (EFGS SOP2987).

ANALYTICAL AND QUALITY CONTROL ISSUES

Method blanks were prepared for every preparation to assess possible blank contribution from the sample preparation procedure. The method blanks were carried through the entire analytical procedure. All blanks fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

Liquid spikes, certified reference material (CRM) or a quality control samples (QCS) were prepared for every preparation as a measure of accuracy. All liquid spikes, CRMs and/or QCS samples fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries fell within the established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery

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Patrick Garcia-Strickland, Business Unit Manager



Frontier Global Sciences

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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

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Patrick Garcia-Strickland, Business Unit Manager



Frontier Global Sciences

Sample Receipt Checklist

Client: Tetra TechDate & Time Received: 1/7/22 11:00Date Labeled: 1/7/22 Labeled By: ATKMatrix: TISSUESReceived By: RLabel Verified By: R 1/7/22# of Coolers Received: 1Samples Arrived By: X Shipping Service _____ Courier _____ Hand _____ Other (Specify: _____)Coolant: ☐ None/Ambient ☐ Loose Ice ☐ Gel Ice ☒ Dry Ice Coolant Required: (Y) NTemp Blank Used: (Y) N for Cooler(s): _____Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: (Y) NSamples from Wisconsin have special requirements. Shipment received includes samples from Wisconsin: (Y) N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>N</u>	
Custody seals signed:	<u>NA</u>	

TID: <u>80187819</u>	CF: <u>-6.5 °C</u>	Date/time: <u>1/7/22</u>	11:00 By: <u>R</u>
Cooler 1: <u>-1.2 °C</u>	w/ CF: <u>-1.7 °C</u>	Cooler 4: _____ °C	w/ CF: _____ °C
Cooler 2: _____ °C	w/ CF: _____ °C	Cooler 5: _____ °C	w/ CF: _____ °C
Cooler 3: _____ °C	w/ CF: _____ °C	Cooler 6: _____ °C	w/ CF: _____ °C

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>N</u>	
Preservation type:	<u>NA</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>NA</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>Y</u>	

Anomalies/Non-conformances (attach additional pages if needed):

2A00037



Ship to:
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CHAIN OF CUSTODY

Report to:
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3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

General Notes:

Please report results separately for each Project ID (T423.02, T423.04, SKLMKT)
Please report all results to the MDL, J-flag results between MDL and RL
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-4 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.02	CBWA-1121	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1121-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1181	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1182	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1183	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1183-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1184	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1204	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1205	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1206	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1207	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1222	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1244	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1246	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1247	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1248	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1249	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1250	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1563	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1001	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1002	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1006	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1009	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1010	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1021	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1022	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1023	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1025	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1029	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1030	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1033	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1034	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1036	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1039	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1040	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1042	FISH TISSUE	FROZEN	1		

Relinquished by: Chayungcan V.

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CHAIN OF CUSTODY

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ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-1 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLCOM-1061	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1062	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1063	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1064	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1067	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1068	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1069	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1071	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1073	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1074	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1101	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1104	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1106	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1107	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1109	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1110	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1112	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1113	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1114	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1115	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1116	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1117	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1162	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1163	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1167	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1461	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1464	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1467	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1469	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1470	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1481	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1484	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1485	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1487	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1489	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1501	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1503	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1504	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1505	FISH TISSUE	FROZEN	1		

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CHAIN OF CUSTODY

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLWC-1506	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1507	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1508	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1509	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1510	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1511	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1512	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1514	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1515	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1525	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1542	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1542-DUP	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1544	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1545	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1546	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1081	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1084	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1086	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1087	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1088	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1089	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1090	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1091	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1092	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1093	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1095	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1261	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1266	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1267	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1283	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1285	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1286	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1289	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1290	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1291	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1292	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1293	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1301	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1302	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1303	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1305	FISH TISSUE	FROZEN	1		

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4 JAN 22

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CHAIN OF CUSTODY

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLWE-1307	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1321	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1322	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1323	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1324	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1326	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1327	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1328	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1343	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1343-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1344	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1345	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1346	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1346-DUP	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1348	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1349	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1350	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1352	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1353	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1354	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1355	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1356	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1359	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1381	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1384	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1385	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1386	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1388	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1401	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1403	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1404	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1406	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1407	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1409	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1410	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1421	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1422	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1423	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1424	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1425	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-001	FISH TISSUE	FROZEN	1		

Relinquished by: Chayongoon V.

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4 JAN 22
E. T. L.
1/13/22

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CHAIN OF CUSTODY

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-002	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-003	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-004	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-005	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-006	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-007	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-008	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-009	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-010	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-011	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-012	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-013	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-014	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-015	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-015-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-017	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-018	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-020	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-022	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-025	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-026	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-030	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-032	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-033	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-035	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-037	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-040	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-042	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-043	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-046	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-048	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-049	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-052	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-054	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-057	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-058	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-059	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-060	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-061	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-061-DUP	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-062	FISH TISSUE	FROZEN	1		

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CHAIN OF CUSTODY

Report to:
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Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-063	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-064	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-065	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-066	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-067	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-068	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-069	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-070	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-071	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-072	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-073	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-074	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-075	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-076	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-077	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-078	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-079	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-080	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-080-DUP	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-081	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-082	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-083	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-084	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-085	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-086	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-087	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-088	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-089	FISH TISSUE	FROZEN	1		

Relinquished by: Chayngoon V.

Relinquished by:

4 JAN 22

Received by:

R. Z. L.
1/12/22 11:16w

Received by:

Ship to:

Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-090	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-091	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-092	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-093	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-094	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-095	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-096	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-097	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-098	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-098-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-099	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-100	FISH TISSUE	FROZEN	1		

Relinquished by: Chayungoon V.

Relinquished by:

4 JAN 22

Received by: 
1/4/22 11:26

Received by:



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Barium

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2837 Nitric Tissue Digestion

CBWA-1121	2A00037-01	0.121	0.004	0.037	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	
CBWA-1121-DUP	2A00037-02	0.054	0.003	0.035	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	
CBWA-1183	2A00037-05	0.066	0.004	0.040	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	
CBWA-1183-DUP	2A00037-06	0.103	0.004	0.039	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	

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Patrick Garcia-Strickland, Business Unit Manager

Page 13 of 20



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Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Inorganic Arsenic

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2993 Speciation Oven Digestion for Solids												
CBWA-1121	2A00037-01	ND	0.007	0.010	mg/kg	10	F201367	24-Jan-22	2A26010	25-Jan-22	EPA 1632	QM-12, U
CBWA-1121-DUP	2A00037-02	ND	0.021	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
CBWA-1183	2A00037-05	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
CBWA-1183-DUP	2A00037-06	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U

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Patrick Garcia-Strickland, Business Unit Manager

Page 14 of 20

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

CBWA-1181	2A00037-03	237	1.72	19.2	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1182	2A00037-04	557	1.61	18.0	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1184	2A00037-07	738	1.67	18.7	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1204	2A00037-08	71.7	0.203	2.27	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
CBWA-1205	2A00037-09	51.4	0.211	2.36	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
CBWA-1206	2A00037-10	443	1.74	19.4	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1207	2A00037-11	380	1.77	19.7	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1222	2A00037-12	47.1	0.208	2.32	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
CBWA-1244	2A00037-13	155	1.71	19.1	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1246	2A00037-14	293	1.69	18.8	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1247	2A00037-15	150	1.62	18.1	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1248	2A00037-16	479	1.64	18.4	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1249	2A00037-17	95.8	0.220	2.45	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
CBWA-1250	2A00037-18	395	1.63	18.2	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
CBWA-1563	2A00037-19	12.8	0.087	0.970	ng/g	20	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	

Sample Preparation: EFGS SOP2837 Nitric Tissue Digestion

CBWA-1121	2A00037-01	462	5.0	18.7	ng/g	100	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
CBWA-1121-DUP	2A00037-02	447	4.6	17.3	ng/g	100	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
CBWA-1183	2A00037-05	10.4	0.5	2.0	ng/g	10	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	
CBWA-1183-DUP	2A00037-06	9.3	0.5	1.9	ng/g	10	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	

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Patrick Garcia-Strickland, Business Unit Manager

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201339 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201339-BLK1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201339-BLK2)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201339-BLK3)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201339-BS1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	373.0	1.79	20.0	ng/g	401.60		92.9	75-125			
LCS Dup (F201339-BSD1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	369.2	1.79	20.0	ng/g	401.60		91.9	75-125	1.02	24	
Matrix Spike (F201339-MS1)					Source: 2A00037-03 Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	607.3	1.68	18.7	ng/g	375.47	237.1	98.6	71-125			
Matrix Spike (F201339-MS2)					Source: 2A00037-04 Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	829.8	1.68	18.8	ng/g	377.59	556.9	72.3	71-125			
Matrix Spike Dup (F201339-MSD1)					Source: 2A00037-03 Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	642.2	1.78	19.9	ng/g	398.73	237.1	102	71-125	3.01	24	
Matrix Spike Dup (F201339-MSD2)					Source: 2A00037-04 Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	813.3	1.61	18.0	ng/g	361.41	556.9	70.9	71-125	1.89	24	QM-07

Batch F201360 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201360-BLK1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	0.012	0.004	0.040	mg/kg							J

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Patrick Garcia-Strickland, Business Unit Manager



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201360 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201360-BLK2)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	0.017	0.004	0.040	mg/kg							J
LCS (F201360-BS1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	4.905	0.004	0.040	mg/kg	5.0000		98.1	85-115			
LCS Dup (F201360-BSD1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	4.957	0.004	0.040	mg/kg	5.0000		99.1	85-115	1.06	20	
Matrix Spike (F201360-MS1)					Source: 2A00037-01		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.978	0.004	0.037	mg/kg	4.6074	0.121	105	80-120			
Matrix Spike (F201360-MS2)					Source: 2A00039-13		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.522	0.004	0.037	mg/kg	4.6538	0.034	96.4	80-120			
Matrix Spike Dup (F201360-MSD1)					Source: 2A00037-01		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.870	0.004	0.040	mg/kg	4.9485	0.121	96.0	80-120	9.37	20	
Matrix Spike Dup (F201360-MSD2)					Source: 2A00039-13		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.202	0.003	0.035	mg/kg	4.3569	0.034	95.7	80-120	0.804	20	

Batch F201361 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201361-BLK1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U
Blank (F201361-BLK2)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201361 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201361-BLK3)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U
LCS (F201361-BS1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	382.7	10.6	40.0	ng/g	401.60		95.3	75-125			
LCS Dup (F201361-BSD1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	395.2	10.6	40.0	ng/g	401.60		98.4	75-125	3.21	24	
Matrix Spike (F201361-MS1)		Source: 2A00037-01			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	810.6	9.8	36.9	ng/g	370.07	462.2	94.1	71-125			
Matrix Spike (F201361-MS2)		Source: 2A00039-13RE1			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	1846	19.8	74.5	ng/g	373.79	1374	126	71-125			QM-02
Matrix Spike Dup (F201361-MSD1)		Source: 2A00037-01			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	827.7	10.5	39.6	ng/g	397.47	462.2	91.9	71-125	2.36	24	
Matrix Spike Dup (F201361-MSD2)		Source: 2A00039-13RE1			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	1918	18.5	69.7	ng/g	349.95	1374	155	71-125	20.6	24	QM-02, QR-08

Batch F201367 - EFGS SOP2993 Speciation Oven Digestion for Solids

Blank (F201367-BLK1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U
Blank (F201367-BLK2)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201367 - EFGS SOP2993 Speciation Oven Digestion for Solids

LCS (F201367-BS1)

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.103	0.007	0.010	mg/kg	0.10000		103	50-150		
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LCS Dup (F201367-BSD1)

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.100	0.007	0.010	mg/kg	0.10000		100	50-150	2.87	35
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Matrix Spike (F201367-MS1)

Source: 2A00037-01

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.076	0.007	0.010	mg/kg	0.097580	ND	77.6	50-150		
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Matrix Spike (F201367-MS2)

Source: 2A00038-07

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.084	0.007	0.010	mg/kg	0.096246	ND	86.8	50-150		
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Matrix Spike Dup (F201367-MSD1)

Source: 2A00037-01

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.073	0.007	0.010	mg/kg	0.095547	ND	76.6	50-150	1.19	35
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Matrix Spike Dup (F201367-MSD2)

Source: 2A00038-07

Prepared: 24-Jan-22 Analyzed: 25-Jan-22

Inorganic Arsenic	0.078	0.007	0.010	mg/kg	0.098678	ND	78.8	50-150	9.66	35
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Eurofins Frontier Global Sciences, LLC

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Patrick Garcia-Strickland, Business Unit Manager

Page 19 of 20

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.02
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:06

Notes and Definitions

- U Analyte was not detected and is reported as less than the LOD or as defined by the client. The LOD has been adjusted for any dilution or concentration of the sample.
- QR-08 The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
- QM-12 Continuing calibration verification (CCV) and/or blank spike/blank spike duplicate (BS/BSD) recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
- QM-07 The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- QM-02 The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
- J The result is an estimated concentration.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

02 February 2022

Theodore E. Donn, Jr, PhD
Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette, CA 94549
RE: Gulf of Thailand Tissues

Enclosed are the analytical results for samples received by Eurofins Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Patrick Strickland". The signature is written in a cursive, flowing style.

Patrick Garcia-Strickland
Business Unit Manager



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLCOM-1001	2A00038-01	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1002	2A00038-02	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1004	2A00038-03	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1004-DUP	2A00038-04	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1006	2A00038-05	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1009	2A00038-06	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1010	2A00038-07	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1021	2A00038-08	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1022	2A00038-09	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1023	2A00038-10	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1025	2A00038-11	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1029	2A00038-12	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1030	2A00038-13	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1033	2A00038-14	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1034	2A00038-15	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1036	2A00038-16	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1039	2A00038-17	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1040	2A00038-18	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1042	2A00038-19	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1061	2A00038-20	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1062	2A00038-21	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1063	2A00038-22	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1064	2A00038-23	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1066	2A00038-24	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1066-DUP	2A00038-25	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1067	2A00038-26	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLCOM-1068	2A00038-27	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1069	2A00038-28	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1071	2A00038-29	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1073	2A00038-30	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1074	2A00038-31	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1101	2A00038-32	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1104	2A00038-33	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1106	2A00038-34	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1107	2A00038-35	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1109	2A00038-36	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1110	2A00038-37	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1112	2A00038-38	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1113	2A00038-39	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1114	2A00038-40	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1115	2A00038-41	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1116	2A00038-42	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1117	2A00038-43	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1162	2A00038-44	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1163	2A00038-45	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLCOM-1167	2A00038-46	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1461	2A00038-47	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1463	2A00038-48	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1463-DUP	2A00038-49	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1464	2A00038-50	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1467	2A00038-51	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1469	2A00038-52	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLWC-1470	2A00038-53	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1481	2A00038-54	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1484	2A00038-55	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1485	2A00038-56	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1487	2A00038-57	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1489	2A00038-58	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1501	2A00038-59	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1503	2A00038-60	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1504	2A00038-61	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1505	2A00038-62	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1506	2A00038-63	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1507	2A00038-64	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1508	2A00038-65	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1509	2A00038-66	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1510	2A00038-67	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1511	2A00038-68	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1512	2A00038-69	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1514	2A00038-70	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1515	2A00038-71	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1525	2A00038-72	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1542	2A00038-73	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1542-DUP	2A00038-74	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1544	2A00038-75	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1545	2A00038-76	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWC-1546	2A00038-77	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1081	2A00038-78	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLWE-1082	2A00038-79	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1082-DUP	2A00038-80	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1084	2A00038-81	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1086	2A00038-82	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1087	2A00038-83	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1088	2A00038-84	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1089	2A00038-85	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1090	2A00038-86	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1091	2A00038-87	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1092	2A00038-88	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1093	2A00038-89	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1095	2A00038-90	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1261	2A00038-91	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1266	2A00038-92	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1267	2A00038-93	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1283	2A00038-94	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1285	2A00038-95	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1286	2A00038-96	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1289	2A00038-97	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1290	2A00038-98	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1291	2A00038-99	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1292	2A00038-AA	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1293	2A00038-AB	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1301	2A00038-AC	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1302	2A00038-AD	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1303	2A00038-AE	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLWE-1305	2A00038-AF	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1307	2A00038-AG	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1321	2A00038-AH	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1322	2A00038-AI	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1323	2A00038-AJ	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1324	2A00038-AK	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1325	2A00038-AL	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1325-DUP	2A00038-AM	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1326	2A00038-AN	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1327	2A00038-AO	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWE-1328	2A00038-AP	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1343	2A00038-AQ	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1343-DUP	2A00038-AR	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1344	2A00038-AS	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1345	2A00038-AT	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1346	2A00038-AU	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1346-DUP	2A00038-AV	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1348	2A00038-AW	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1349	2A00038-AX	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1350	2A00038-AY	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1352	2A00038-AZ	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1353	2A00038-BA	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1354	2A00038-BB	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1355	2A00038-BC	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1356	2A00038-BD	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1359	2A00038-BE	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Page 6 of 34



Frontier Global Sciences

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PLWG-1381	2A00038-BF	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1384	2A00038-BG	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1385	2A00038-BH	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1386	2A00038-BI	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1388	2A00038-BJ	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1401	2A00038-BK	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1403	2A00038-BL	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1404	2A00038-BM	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1406	2A00038-BN	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1407	2A00038-BO	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1409	2A00038-BP	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1410	2A00038-BQ	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1421	2A00038-BR	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1422	2A00038-BS	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1423	2A00038-BT	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1424	2A00038-BU	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
PLWG-1425	2A00038-BV	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Tetra Tech, Inc. Lafayette

3697 Mt. Diablo Blvd., Suite 150

Lafayette CA, 94549

Project: Gulf of Thailand Tissues

Project Number: T423.04

Project Manager: Theodore E. Donn, Jr, PhD

Reported:

02-Feb-22 10:24

SAMPLE RECEIPT

Samples were received at Eurofins Frontier Global Sciences (EFGS) on 07-Jan-22 10:55. The samples were received intact, on-ice within a sealed cooler.

SAMPLE PREPARATION AND ANALYSIS

Tissue samples were homogenized per EFGS SOP5141 prior to digestion.

Total mercury preparation and analysis was performed by flow injection atomic fluorescence spectrometry (FI-AFS) in accordance with EPA 1631B (EFGS SOP2822).

Samples were prepared and analyzed for inorganic arsenic speciation by hydride generation cryogenic trapping gas chromatography atomic absorption spectrometry (HG-CT-GC-AAS) in accordance with EPA 1632 (EFGS SOP2987).

ANALYTICAL AND QUALITY CONTROL ISSUES

Method blanks were prepared for every preparation to assess possible blank contribution from the sample preparation procedure. The method blanks were carried through the entire analytical procedure. All blanks fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

Liquid spikes, certified reference material (CRM) or a quality control samples (QCS) were prepared for every preparation as a measure of accuracy. All liquid spikes, CRMs and/or QCS samples fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries fell within the established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

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Frontier Global Sciences

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3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

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Frontier Global Sciences

Sample Receipt Checklist

Client: Tetra TechDate & Time Received: 1/7/22 11:00Date Labeled: 1/7/22 Labeled By: ADRMatrix: TissuesReceived By: DRLabel Verified By: DR 1/7/22# of Coolers Received: 1Samples Arrived By: X

Shipping Service

Courier

Hand

Other (Specify: _____)

Coolant: ☐ None/Ambient☐ Loose Ice☐ Gel Ice☒ Dry IceCoolant Required: Y NTemp Blank Used: Y N for Cooler(s): _____Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y NSamples from Wisconsin have special requirements. Shipment received includes samples from Wisconsin: Y N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>N</u>	
Custody seals signed:	<u>NA</u>	

TID: <u>80187819</u> CF: <u>-6.5</u> °C	Date/time: <u>1/7/22</u> <u>11:00</u> By: <u>DR</u>
Cooler 1: <u>-1.2</u> °C w/ CF: <u>-1.7</u> °C	Cooler 4: °C w/ CF: °C
Cooler 2: °C w/ CF: °C	Cooler 5: °C w/ CF: °C
Cooler 3: °C w/ CF: °C	Cooler 6: °C w/ CF: °C

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>N</u>	
Preservation type:	<u>NA</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>NA</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>NA</u>	

Anomalies/Non-conformances (attach additional pages if needed):

2A00038



Ship to:

Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

General Notes:

Please report results separately for each Project ID (T423 02, T423 04, SKLMKT)
Please report all results to the MDL, J-flag results between MDL and RL
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.02	CBWA-1121	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1121-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1181	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1182	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1183	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1183-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1184	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1204	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1205	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1206	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1207	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1222	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1244	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1246	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1247	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1248	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1249	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1250	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1563	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1001	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1002	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1006	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1009	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1010	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1021	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1022	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1023	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1025	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1029	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1030	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1033	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1034	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1036	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1039	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1040	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1042	FISH TISSUE	FROZEN	1		

Relinquished by:

Chayungoon V.
4 JAN 22

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R. V. J.

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1/1/22 11:00
7756 7580 4282

Ship to:

Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLCOM-1061	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1062	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1063	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1064	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1067	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1068	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1069	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1071	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1073	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1074	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1101	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1104	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1106	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1107	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1109	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1110	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1112	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1113	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1114	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1115	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1116	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1117	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1162	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1163	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1167	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1461	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1464	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1467	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1469	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1470	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1481	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1484	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1485	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1487	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1489	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1501	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1503	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1504	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1505	FISH TISSUE	FROZEN	1		

Relinquished by: Cheyung V.

4 JAN 22
1/12/22 11:40

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Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
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CHAIN OF CUSTODY

Report to:
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Tetra Tech
3697 Mt. Diablo Blvd., ste 150
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ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLWC-1506	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1507	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1508	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1509	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1510	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1511	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1512	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1514	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1515	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1525	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1542	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1542-DUP	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1544	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1545	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1546	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1081	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1084	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1086	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1087	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1088	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1089	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1090	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1091	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1092	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1093	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1095	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1261	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1266	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1267	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1283	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1285	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1286	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1289	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1290	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1291	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1292	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1293	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1301	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1302	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1303	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1305	FISH TISSUE	FROZEN	1		

Relinquished by: **Chayungpan V.**
4 JAN 22

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Eurofins - Frontier Global Sci.
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CHAIN OF CUSTODY

Report to:
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3697 Mt. Diablo Blvd., ste 150
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ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLWE-1307	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1321	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1322	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1323	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1324	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1326	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1327	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1328	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1343	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1343-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1344	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1345	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1346	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1348	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1349	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1350	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1352	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1353	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1354	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1355	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1356	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1359	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1381	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1384	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1385	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1386	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1388	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1401	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1403	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1404	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1406	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1407	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1409	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1410	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1421	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1422	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1423	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1424	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1425	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-001	FISH TISSUE	FROZEN	1		

Relinquished by:

Chayungoon V.

4 JAN 22

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Ship to:

Patrick Garcia-Strickland
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5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-002	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-003	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-004	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-005	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-006	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-007	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-008	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-009	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-010	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-011	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-012	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-013	FISH TISSUE	FROZEN	1		1
SKLMKT	SKLMKT-014	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-015	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-015-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-017	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-018	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-020	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-022	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-025	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-026	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-030	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-032	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-033	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-035	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-037	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-040	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-042	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-043	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-046	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-048	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-049	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-052	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-054	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-057	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-058	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-059	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-060	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-061	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-061-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-062	FISH TISSUE	FROZEN	1		

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Chayngoon V.

4 JAN 22

Received by:

R. J. F. 1/7/22
H. H. 1/7/22

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Ship to:

Patrick Garcia-Strickland
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5755 8th St. E
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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-4 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-063	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-064	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-065	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-066	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-067	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-068	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-069	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-070	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-071	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-072	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-073	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-074	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-075	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-076	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-077	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-078	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-079	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-080	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-080-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-081	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-082	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-083	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-084	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-085	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-086	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-087	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-088	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-089	FISH TISSUE	FROZEN	1		

Relinquished by: Chayong V.

4 JAN '22

Received by:

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Ship to:

Patrick Garcia-Strickland
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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-090	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-091	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-092	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-093	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-094	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-095	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-096	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-097	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-098	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-098-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-099	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-100	FISH TISSUE	FROZEN	1		

Relinquished by: Chayngoon V.

Relinquished by:

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4 JAN 22
1/4/22 11:20

Received by:

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Inorganic Arsenic

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2993 Speciation Oven Digestion for Solids

PLCOM-1010	2A00038-07	ND	0.007	0.010	mg/kg	10	F201367	24-Jan-22	2A26010	25-Jan-22	EPA 1632	QM-12, U
PLCOM-1036	2A00038-16	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLCOM-1039	2A00038-17	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLCOM-1163	2A00038-45	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWC-1484	2A00038-55	0.025	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	J
PLWC-1542	2A00038-73	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWC-1542-DUP	2A00038-74	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWC-1545	2A00038-76	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWE-1090	2A00038-86	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWE-1095	2A00038-90	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWE-1289	2A00038-97	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWE-1328	2A00038-AP	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWG-1346	2A00038-AU	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWG-1346-DUP	2A00038-AV	ND	0.020	0.029	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWG-1385	2A00038-BH	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
PLWG-1423	2A00038-BT	ND	0.021	0.030	mg/kg	30	F201367	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U





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5755 8th Street East
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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion												
PLCOM-1001	2A00038-01	47.7	0.218	2.44	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1002	2A00038-02	59.2	0.214	2.39	ng/g	50	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1004	2A00038-03	258	1.69	18.8	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1004-DUP	2A00038-04	257	1.79	20.0	ng/g	400	F201339	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1006	2A00038-05	93.6	0.423	4.72	ng/g	100	F201339	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1009	2A00038-06	55.8	0.202	2.26	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1010	2A00038-07	65.9	0.213	2.38	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1021	2A00038-08	48.1	0.220	2.46	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1022	2A00038-09	43.8	0.205	2.29	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1023	2A00038-10	65.2	0.206	2.30	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1025	2A00038-11	48.5	0.217	2.43	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1029	2A00038-12	26.4	0.084	0.942	ng/g	20	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1030	2A00038-13	371	1.73	19.3	ng/g	400	F201340	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1033	2A00038-14	85.1	0.209	2.33	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1034	2A00038-15	56.1	0.216	2.41	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1036	2A00038-16	83.1	0.208	2.33	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1039	2A00038-17	59.2	0.207	2.31	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1040	2A00038-18	86.4	0.213	2.37	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1042	2A00038-19	334	1.72	19.2	ng/g	400	F201340	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1061	2A00038-20	198	1.69	18.8	ng/g	400	F201340	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1062	2A00038-21	60.9	0.207	2.31	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1063	2A00038-22	174	1.79	20.0	ng/g	400	F201340	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1064	2A00038-23	272	1.77	19.7	ng/g	400	F201340	17-Jan-22	2A19008	18-Jan-22	EPA 1631B	
PLCOM-1066	2A00038-24	86.4	0.204	2.28	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1066-DUP	2A00038-25	80.0	0.215	2.40	ng/g	50	F201340	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1067	2A00038-26	462	0.812	9.06	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1068	2A00038-27	569	0.838	9.35	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1069	2A00038-28	53.4	0.169	1.89	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1071	2A00038-29	80.2	0.798	8.91	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1073	2A00038-30	269	0.838	9.36	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1074	2A00038-31	51.7	0.170	1.89	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1101	2A00038-32	64.0	0.168	1.88	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	

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Patrick Garcia-Strickland, Business Unit Manager



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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

PLCOM-1104	2A00038-33	165	0.801	8.93	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1106	2A00038-34	36.5	0.173	1.93	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1107	2A00038-35	121	0.861	9.60	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1109	2A00038-36	55.1	0.168	1.87	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1110	2A00038-37	158	0.844	9.42	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1112	2A00038-38	140	0.868	9.69	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1113	2A00038-39	72.9	0.798	8.91	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1114	2A00038-40	294	0.887	9.90	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1115	2A00038-41	45.1	0.175	1.95	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1116	2A00038-42	55.3	0.173	1.93	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1117	2A00038-43	53.2	0.174	1.94	ng/g	40	F201341	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLCOM-1162	2A00038-44	300	0.845	9.43	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1163	2A00038-45	185	0.865	9.65	ng/g	200	F201341	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLCOM-1167	2A00038-46	80.0	0.841	9.39	ng/g	200	F201342	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLWC-1461	2A00038-47	167	0.890	9.93	ng/g	200	F201342	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLWC-1463	2A00038-48	37.2	0.161	1.80	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1463-DUP	2A00038-49	29.9	0.169	1.89	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1464	2A00038-50	36.2	0.171	1.90	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1467	2A00038-51	40.1	0.168	1.87	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1469	2A00038-52	34.6	0.160	1.78	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1470	2A00038-53	34.1	0.164	1.83	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1481	2A00038-54	46.7	0.164	1.84	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1484	2A00038-55	91.3	0.816	9.10	ng/g	200	F201342	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLWC-1485	2A00038-56	21.0	0.081	0.904	ng/g	20	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1487	2A00038-57	12.9	0.082	0.914	ng/g	20	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1489	2A00038-58	21.4	0.080	0.888	ng/g	20	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1501	2A00038-59	293	0.845	9.43	ng/g	200	F201342	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLWC-1503	2A00038-60	44.2	0.173	1.93	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1504	2A00038-61	87.8	0.845	9.43	ng/g	200	F201342	17-Jan-22	2A20012	19-Jan-22	EPA 1631B	
PLWC-1505	2A00038-62	21.5	0.161	1.80	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1506	2A00038-63	32.1	0.161	1.80	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1507	2A00038-64	651	1.63	18.2	ng/g	400	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	

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Patrick Garcia-Strickland, Business Unit Manager

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

PLWC-1508	2A00038-65	28.7	0.173	1.93	ng/g	40	F201342	17-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWC-1509	2A00038-66	30.6	0.084	0.935	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1510	2A00038-67	652	1.66	18.5	ng/g	400	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1511	2A00038-68	35.3	0.088	0.981	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1512	2A00038-69	50.2	0.421	4.70	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWC-1514	2A00038-70	13.7	0.085	0.948	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1515	2A00038-71	23.7	0.081	0.899	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1525	2A00038-72	679	1.65	18.5	ng/g	400	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1542	2A00038-73	59.1	0.202	2.26	ng/g	50	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1542-DUP	2A00038-74	58.5	0.415	4.63	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWC-1544	2A00038-75	897	2.18	24.4	ng/g	500	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1545	2A00038-76	573	1.70	19.0	ng/g	400	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWC-1546	2A00038-77	21.1	0.083	0.928	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1081	2A00038-78	44.4	0.422	4.71	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1082	2A00038-79	488	1.77	19.8	ng/g	400	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1082-DUP	2A00038-80	481	1.77	19.8	ng/g	400	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1084	2A00038-81	145	0.443	4.95	ng/g	100	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1086	2A00038-82	77.0	0.415	4.63	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1087	2A00038-83	150	0.413	4.61	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1088	2A00038-84	20.8	0.084	0.936	ng/g	20	F201343	17-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1089	2A00038-85	173	0.408	4.55	ng/g	100	F201343	17-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1090	2A00038-86	45.2	0.448	5.00	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1091	2A00038-87	14.3	0.082	0.913	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1092	2A00038-88	84.4	0.407	4.54	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1093	2A00038-89	167	0.422	4.71	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1095	2A00038-90	10.9	0.078	0.873	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1261	2A00038-91	174	0.379	4.23	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1266	2A00038-92	50.3	0.429	4.79	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1267	2A00038-93	70.2	0.424	4.73	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1283	2A00038-94	84.6	0.426	4.75	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1285	2A00038-95	29.8	0.080	0.898	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1286	2A00038-96	32.0	0.089	0.991	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	

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Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

PLWE-1289	2A00038-97	248	0.441	4.92	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1290	2A00038-98	243	0.438	4.89	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1291	2A00038-99	35.0	0.088	0.980	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1292	2A00038-AA	21.5	0.084	0.938	ng/g	20	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1293	2A00038-AB	43.5	0.400	4.47	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1301	2A00038-AC	95.3	0.426	4.75	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1302	2A00038-AD	445	0.861	9.61	ng/g	200	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1303	2A00038-AE	133	0.398	4.44	ng/g	100	F201344	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1305	2A00038-AF	41.2	0.433	4.83	ng/g	100	F201344	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1307	2A00038-AG	24.2	0.089	0.989	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1321	2A00038-AH	187	0.422	4.71	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1322	2A00038-AI	77.1	0.406	4.53	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1323	2A00038-AJ	22.3	0.081	0.901	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1324	2A00038-AK	107	0.418	4.67	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1325	2A00038-AL	23.5	0.083	0.922	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1325-DUP	2A00038-AM	21.6	0.078	0.871	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1326	2A00038-AN	150	0.404	4.51	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWE-1327	2A00038-AO	21.3	0.078	0.876	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWE-1328	2A00038-AP	409	0.747	8.34	ng/g	200	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1343	2A00038-AQ	26.2	0.082	0.914	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1343-DUP	2A00038-AR	24.5	0.079	0.876	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1344	2A00038-AS	59.1	0.424	4.73	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWG-1345	2A00038-AT	30.4	0.086	0.963	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1346	2A00038-AU	545	0.826	9.21	ng/g	200	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1346-DUP	2A00038-AV	485	1.51	16.9	ng/g	400	F201345	18-Jan-22	2A28001	27-Jan-22	EPA 1631B	
PLWG-1348	2A00038-AW	55.0	0.189	2.11	ng/g	50	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1349	2A00038-AX	20.3	0.084	0.942	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1350	2A00038-AY	40.8	0.440	4.91	ng/g	100	F201345	18-Jan-22	2A21010	20-Jan-22	EPA 1631B	
PLWG-1352	2A00038-AZ	29.6	0.085	0.945	ng/g	20	F201345	18-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1353	2A00038-BA	44.8	0.413	4.61	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1354	2A00038-BB	38.1	0.412	4.59	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1355	2A00038-BC	35.3	0.402	4.49	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	

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Patrick Garcia-Strickland, Business Unit Manager



Frontier Global Sciences

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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion												
PLWG-1356	2A00038-BD	226	0.439	4.89	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1359	2A00038-BE	26.4	0.087	0.974	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1381	2A00038-BF	198	0.406	4.53	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1384	2A00038-BG	24.8	0.086	0.962	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1385	2A00038-BH	23.2	0.085	0.945	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1386	2A00038-BI	29.7	0.084	0.932	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1388	2A00038-BJ	33.7	0.082	0.920	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1401	2A00038-BK	337	0.823	9.19	ng/g	200	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1403	2A00038-BL	59.7	0.206	2.29	ng/g	50	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1404	2A00038-BM	497	1.62	18.1	ng/g	400	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1406	2A00038-BN	590	1.66	18.5	ng/g	400	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1407	2A00038-BO	31.1	0.080	0.895	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1409	2A00038-BP	173	0.446	4.98	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1410	2A00038-BQ	83.1	0.431	4.82	ng/g	100	F201346	18-Jan-22	2A25018	24-Jan-22	EPA 1631B	
PLWG-1421	2A00038-BR	14.7	0.081	0.901	ng/g	20	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1422	2A00038-BS	413	0.883	9.85	ng/g	200	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1423	2A00038-BT	618	1.64	18.3	ng/g	400	F201346	18-Jan-22	2A27017	27-Jan-22	EPA 1631B	
PLWG-1424	2A00038-BU	50.6	0.439	4.90	ng/g	100	F201347	20-Jan-22	2A26012	25-Jan-22	EPA 1631B	
PLWG-1425	2A00038-BV	53.6	0.430	4.80	ng/g	100	F201347	20-Jan-22	2A26012	25-Jan-22	EPA 1631B	

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Tetra Tech, Inc. Lafayette
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Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201339 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201339-BLK1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201339-BLK2)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201339-BLK3)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201339-BS1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	373.0	1.79	20.0	ng/g	401.60		92.9	75-125			
LCS Dup (F201339-BSD1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	369.2	1.79	20.0	ng/g	401.60		91.9	75-125	1.02	24	
Matrix Spike (F201339-MS1)					Source: 2A00037-03		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	607.3	1.68	18.7	ng/g	375.47	237.1	98.6	71-125			
Matrix Spike (F201339-MS2)					Source: 2A00037-04		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	829.8	1.68	18.8	ng/g	377.59	556.9	72.3	71-125			
Matrix Spike Dup (F201339-MSD1)					Source: 2A00037-03		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	642.2	1.78	19.9	ng/g	398.73	237.1	102	71-125	3.01	24	
Matrix Spike Dup (F201339-MSD2)					Source: 2A00037-04		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	813.3	1.61	18.0	ng/g	361.41	556.9	70.9	71-125	1.89	24	QM-07

Batch F201340 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201340-BLK1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	0.109	0.090	1.00	ng/g							J

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Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201340 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201340-BLK2)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	0.127	0.090	1.00	ng/g							J
Blank (F201340-BLK3)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	0.130	0.090	1.00	ng/g							J
LCS (F201340-BS1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	385.4	1.79	20.0	ng/g	401.60		96.0	75-125			
LCS Dup (F201340-BSD1)					Prepared: 17-Jan-22 Analyzed: 18-Jan-22						
Mercury	381.3	1.79	20.0	ng/g	401.60		94.9	75-125	1.08	24	
Matrix Spike (F201340-MS1)					Source: 2A00038-06RE1		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	427.5	1.77	19.8	ng/g	397.15	55.83	93.6	71-125			
Matrix Spike (F201340-MS2)					Source: 2A00038-07RE1		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	408.7	1.63	18.2	ng/g	364.56	65.91	94.0	71-125			
Matrix Spike Dup (F201340-MSD1)					Source: 2A00038-06RE1		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	407.6	1.66	18.5	ng/g	371.44	55.83	94.7	71-125	1.18	24	
Matrix Spike Dup (F201340-MSD2)					Source: 2A00038-07RE1		Prepared: 17-Jan-22 Analyzed: 18-Jan-22				
Mercury	431.4	1.74	19.4	ng/g	389.45	65.91	93.9	71-125	0.180	24	

Batch F201341 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201341-BLK1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.109	0.090	1.00	ng/g							J

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Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201341 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201341-BLK2)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.118	0.090	1.00	ng/g							J
Blank (F201341-BLK3)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.095	0.090	1.00	ng/g							J
LCS (F201341-BS1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	370.0	1.79	20.0	ng/g	401.60		92.1	75-125			
LCS Dup (F201341-BSD1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	378.8	1.79	20.0	ng/g	401.60		94.3	75-125	2.33	24	
Matrix Spike (F201341-MS1)					Source: 2A00038-26		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	852.5	1.75	19.6	ng/g	393.26	461.7	99.4	71-125			
Matrix Spike (F201341-MS2)					Source: 2A00038-27		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	968.3	1.74	19.4	ng/g	390.21	569.0	102	71-125			
Matrix Spike Dup (F201341-MSD1)					Source: 2A00038-26		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	870.3	1.76	19.6	ng/g	394.50	461.7	104	71-125	4.14	24	
Matrix Spike Dup (F201341-MSD2)					Source: 2A00038-27		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	912.6	1.77	19.7	ng/g	395.59	569.0	86.9	71-125	16.3	24	

Batch F201342 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201342-BLK1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.124	0.090	1.00	ng/g							J

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Project Manager: Theodore E. Donn, Jr, PhD

Reported:
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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201342 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201342-BLK2)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.199	0.090	1.00	ng/g							J
Blank (F201342-BLK3)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	0.168	0.090	1.00	ng/g							J
LCS (F201342-BS1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	407.6	1.79	20.0	ng/g	401.60		101	75-125			
LCS Dup (F201342-BSD1)					Prepared: 17-Jan-22 Analyzed: 19-Jan-22						
Mercury	406.5	1.79	20.0	ng/g	401.60		101	75-125	0.280	24	
Matrix Spike (F201342-MS1)					Source: 2A00038-46		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	451.3	1.68	18.7	ng/g	375.47	79.97	98.9	71-125			
Matrix Spike (F201342-MS2)					Source: 2A00038-47		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	554.4	1.74	19.4	ng/g	389.45	167.3	99.4	71-125			
Matrix Spike Dup (F201342-MSD1)					Source: 2A00038-46		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	453.4	1.65	18.5	ng/g	370.48	79.97	101	71-125	1.90	24	
Matrix Spike Dup (F201342-MSD2)					Source: 2A00038-47		Prepared: 17-Jan-22 Analyzed: 19-Jan-22				
Mercury	537.7	1.77	19.8	ng/g	396.84	167.3	93.3	71-125	6.28	24	

Batch F201343 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201343-BLK1)					Prepared: 17-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.102	0.090	1.00	ng/g							J

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201343 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201343-BLK2)					Prepared: 17-Jan-22 Analyzed: 20-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201343-BLK3)					Prepared: 17-Jan-22 Analyzed: 20-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201343-BS1)					Prepared: 17-Jan-22 Analyzed: 20-Jan-22						
Mercury	367.1	1.79	20.0	ng/g	401.60		91.4	75-125			
LCS Dup (F201343-BSD1)					Prepared: 17-Jan-22 Analyzed: 20-Jan-22						
Mercury	371.3	1.79	20.0	ng/g	401.60		92.5	75-125	1.14	24	
Matrix Spike (F201343-MS1)					Source: 2A00038-66RE1		Prepared: 17-Jan-22 Analyzed: 20-Jan-22				
Mercury	384.2	1.70	18.9	ng/g	380.02	30.65	93.0	71-125			
Matrix Spike (F201343-MS3)					Source: 2A00038-67RE1		Prepared: 17-Jan-22 Analyzed: 25-Jan-22				
Mercury	1020	1.64	18.3	ng/g	367.23	652.2	100	71-125			
Matrix Spike Dup (F201343-MSD1)					Source: 2A00038-66RE1		Prepared: 17-Jan-22 Analyzed: 20-Jan-22				
Mercury	402.6	1.71	19.0	ng/g	382.48	30.65	97.3	71-125	4.43	24	
Matrix Spike Dup (F201343-MSD3)					Source: 2A00038-67RE1		Prepared: 17-Jan-22 Analyzed: 25-Jan-22				
Mercury	1054	1.69	18.8	ng/g	377.73	652.2	106	71-125	6.09	24	

Batch F201344 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201344-BLK1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.191	0.090	1.00	ng/g							J

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Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201344 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201344-BLK2)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.098	0.090	1.00	ng/g							J
Blank (F201344-BLK3)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201344-BS1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	362.7	1.79	20.0	ng/g	401.60		90.3	75-125			
LCS Dup (F201344-BSD1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	340.9	1.79	20.0	ng/g	401.60		84.9	75-125	6.20	24	
Matrix Spike (F201344-MS1)					Source: 2A00038-86		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	378.4	1.70	19.0	ng/g	381.46	45.17	87.3	71-125			
Matrix Spike (F201344-MS2)					Source: 2A00038-87RE1		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	360.0	1.78	19.9	ng/g	399.36	14.33	86.6	71-125			
Matrix Spike Dup (F201344-MSD1)					Source: 2A00038-86		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	389.8	1.57	17.6	ng/g	352.40	45.17	97.8	71-125	11.3	24	
Matrix Spike Dup (F201344-MSD2)					Source: 2A00038-87RE1		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	375.5	1.78	19.9	ng/g	399.20	14.33	90.5	71-125	4.41	24	

Batch F201345 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201345-BLK1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.134	0.090	1.00	ng/g							J

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201345 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201345-BLK2)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.101	0.090	1.00	ng/g							J
Blank (F201345-BLK3)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	0.201	0.090	1.00	ng/g							J
LCS (F201345-BS1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	364.6	1.79	20.0	ng/g	401.60		90.8	75-125			
LCS Dup (F201345-BSD1)					Prepared: 18-Jan-22 Analyzed: 20-Jan-22						
Mercury	358.6	1.79	20.0	ng/g	401.60		89.3	75-125	1.68	24	
Matrix Spike (F201345-MS1)					Source: 2A00038-AGRE1		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	365.6	1.66	18.6	ng/g	373.10	24.24	91.5	71-125			
Matrix Spike (F201345-MS2)					Source: 2A00038-AH		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	494.4	1.59	17.8	ng/g	356.79	187.0	86.2	71-125			
Matrix Spike Dup (F201345-MSD1)					Source: 2A00038-AGRE1		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	340.9	1.64	18.3	ng/g	367.63	24.24	86.1	71-125	6.03	24	
Matrix Spike Dup (F201345-MSD2)					Source: 2A00038-AH		Prepared: 18-Jan-22 Analyzed: 20-Jan-22				
Mercury	517.9	1.70	19.0	ng/g	381.89	187.0	86.6	71-125	0.547	24	

Batch F201346 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201346-BLK1)					Prepared: 18-Jan-22 Analyzed: 24-Jan-22						
Mercury	0.155	0.090	1.00	ng/g							J

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201346 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201346-BLK2)					Prepared: 18-Jan-22 Analyzed: 24-Jan-22						
Mercury	0.205	0.090	1.00	ng/g							J
Blank (F201346-BLK3)					Prepared: 18-Jan-22 Analyzed: 24-Jan-22						
Mercury	0.200	0.090	1.00	ng/g							J
LCS (F201346-BS1)					Prepared: 18-Jan-22 Analyzed: 24-Jan-22						
Mercury	361.0	1.79	20.0	ng/g	401.60		89.9	75-125			
LCS Dup (F201346-BSD1)					Prepared: 18-Jan-22 Analyzed: 24-Jan-22						
Mercury	369.7	1.79	20.0	ng/g	401.60		92.1	75-125	2.38	24	
Matrix Spike (F201346-MS1)					Source: 2A00038-BA		Prepared: 18-Jan-22 Analyzed: 24-Jan-22				
Mercury	403.8	1.77	19.8	ng/g	396.68	44.84	90.5	71-125			
Matrix Spike (F201346-MS2)					Source: 2A00038-BB		Prepared: 18-Jan-22 Analyzed: 24-Jan-22				
Mercury	384.5	1.67	18.6	ng/g	373.23	38.08	92.8	71-125			
Matrix Spike Dup (F201346-MSD1)					Source: 2A00038-BA		Prepared: 18-Jan-22 Analyzed: 24-Jan-22				
Mercury	407.3	1.76	19.6	ng/g	393.42	44.84	92.1	71-125	1.82	24	
Matrix Spike Dup (F201346-MSD2)					Source: 2A00038-BB		Prepared: 18-Jan-22 Analyzed: 24-Jan-22				
Mercury	376.4	1.75	19.5	ng/g	391.12	38.08	86.5	71-125	7.04	24	

Batch F201347 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201347-BLK1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.224	0.090	1.00	ng/g							J

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201347 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201347-BLK2)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.193	0.090	1.00	ng/g							J
Blank (F201347-BLK3)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.174	0.090	1.00	ng/g							J
LCS (F201347-BS1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	406.0	1.79	20.0	ng/g	401.60		101	75-125			
LCS Dup (F201347-BSD1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	401.3	1.79	20.0	ng/g	401.60		99.9	75-125	1.18	24	
Matrix Spike (F201347-MS1)					Source: 2A00038-BU		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	454.6	1.77	19.7	ng/g	395.90	50.64	102	71-125			
Matrix Spike (F201347-MS2)					Source: 2A00038-BV		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	424.5	1.69	18.9	ng/g	379.30	53.63	97.8	71-125			
Matrix Spike Dup (F201347-MSD1)					Source: 2A00038-BU		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	433.2	1.75	19.5	ng/g	391.42	50.64	97.7	71-125	4.31	24	
Matrix Spike Dup (F201347-MSD2)					Source: 2A00038-BV		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	407.9	1.67	18.6	ng/g	374.35	53.63	94.6	71-125	3.26	24	

Batch F201367 - EFGS SOP2993 Speciation Oven Digestion for Solids

Blank (F201367-BLK1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201367 - EFGS SOP2993 Speciation Oven Digestion for Solids

Blank (F201367-BLK2)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U
LCS (F201367-BS1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	0.103	0.007	0.010	mg/kg	0.10000		103	50-150			
LCS Dup (F201367-BSD1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	0.100	0.007	0.010	mg/kg	0.10000		100	50-150	2.87	35	
Matrix Spike (F201367-MS1)					Source: 2A00037-01		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.076	0.007	0.010	mg/kg	0.097580	ND	77.6	50-150			
Matrix Spike (F201367-MS2)					Source: 2A00038-07		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.084	0.007	0.010	mg/kg	0.096246	ND	86.8	50-150			
Matrix Spike Dup (F201367-MSD1)					Source: 2A00037-01		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.073	0.007	0.010	mg/kg	0.095547	ND	76.6	50-150	1.19	35	
Matrix Spike Dup (F201367-MSD2)					Source: 2A00038-07		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.078	0.007	0.010	mg/kg	0.098678	ND	78.8	50-150	9.66	35	

Eurofins Frontier Global Sciences, LLC

Patrick Garcia-Strickland, Business Unit Manager

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: T423.04
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
02-Feb-22 10:24

Notes and Definitions

U	Analyte was not detected and is reported as less than the LOD or as defined by the client. The LOD has been adjusted for any dilution or concentration of the sample.
QM-12	Continuing calibration verification (CCV) and/or blank spike/blank spike duplicate (BS/BSD) recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
QM-07	The spike recovery was outside control limits for the MS and/or MSD. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
J	The result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference



Frontier Global Sciences

5755 8th Street East
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18 February 2022

Theodore E. Donn, Jr, PhD
Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette, CA 94549
RE: Gulf of Thailand Tissues

Enclosed are the analytical results for samples received by Eurofins Frontier Global Sciences. All quality control measurements are within established control limits and there were no analytical difficulties encountered with the exception of those listed in the case narrative section of this report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Patrick Strickland". The signature is written in a cursive, flowing style.

Patrick Garcia-Strickland
Business Unit Manager



Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SKLMKT-001	2A00039-01	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-002	2A00039-02	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-003	2A00039-03	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-004	2A00039-04	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-005	2A00039-05	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-006	2A00039-06	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-007	2A00039-07	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-008	2A00039-08	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-009	2A00039-09	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-010	2A00039-10	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-011	2A00039-11	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-012	2A00039-12	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-013	2A00039-13	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-014	2A00039-14	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-015	2A00039-15	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-015-DUP	2A00039-16	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-017	2A00039-17	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-018	2A00039-18	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-020	2A00039-19	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-022	2A00039-20	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-025	2A00039-21	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-026	2A00039-22	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-030	2A00039-23	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-032	2A00039-24	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-033	2A00039-25	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-035	2A00039-26	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Tetra Tech, Inc. Lafayette
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Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SKLMKT-037	2A00039-27	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-040	2A00039-28	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-042	2A00039-29	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-043	2A00039-30	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-046	2A00039-31	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-048	2A00039-32	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-049	2A00039-33	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-052	2A00039-34	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-054	2A00039-35	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-055	2A00039-36	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-055-DUP	2A00039-37	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-057	2A00039-38	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-058	2A00039-39	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-059	2A00039-40	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-060	2A00039-41	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-061	2A00039-42	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-061-DUP	2A00039-43	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-062	2A00039-44	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-063	2A00039-45	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-064	2A00039-46	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-065	2A00039-47	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-066	2A00039-48	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-067	2A00039-49	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-068	2A00039-50	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-069	2A00039-51	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-070	2A00039-52	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SKLMKT-071	2A00039-53	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-072	2A00039-54	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-073	2A00039-55	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-074	2A00039-56	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-075	2A00039-57	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-076	2A00039-58	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-077	2A00039-59	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-078	2A00039-60	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-079	2A00039-61	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-080	2A00039-62	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-080-DUP	2A00039-63	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-081	2A00039-64	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-082	2A00039-65	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-083	2A00039-66	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-084	2A00039-67	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-085	2A00039-68	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-086	2A00039-69	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-087	2A00039-70	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-088	2A00039-71	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-089	2A00039-72	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-090	2A00039-73	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-091	2A00039-74	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-092	2A00039-75	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-093	2A00039-76	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-094	2A00039-77	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-095	2A00039-78	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SKLMKT-096	2A00039-79	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-097	2A00039-80	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-098	2A00039-81	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-098-DUP	2A00039-82	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-099	2A00039-83	Tissue	06-Jan-22 12:00	07-Jan-22 10:55
SKLMKT-100	2A00039-84	Tissue	06-Jan-22 12:00	07-Jan-22 10:55

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Patrick Garcia-Strickland, Business Unit Manager

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhDReported:
18-Feb-22 16:05

SAMPLE RECEIPT

Samples were received at Eurofins Frontier Global Sciences (EFGS) on 07-Jan-22 10:55. The samples were received intact.

SAMPLE PREPARATION AND ANALYSIS

Tissue samples were homogenized per EFGS SOP5141 prior to digestion.

Total mercury preparation and analysis was performed by flow injection atomic fluorescence spectrometry (FI-AFS) in accordance with EPA 1631B (EFGS SOP2822).

Trace metals preparation and analysis was performed by inductively coupled plasma mass spectrometry (ICP-MS) in accordance with EFGS SOP5135), a modified EPA 1638.

Samples were prepared and analyzed for inorganic arsenic speciation by hydride generation cryogenic trapping gas chromatography atomic absorption spectrometry (HG-CT-GC-AAS) in accordance with EPA 1632 (EFGS SOP2987).

ANALYTICAL AND QUALITY CONTROL ISSUES

Method blanks were prepared for every preparation to assess possible blank contribution from the sample preparation procedure. The method blanks were carried through the entire analytical procedure. All blanks fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

Liquid spikes, certified reference material (CRM) or a quality control samples (QCS) were prepared for every preparation as a measure of accuracy. All liquid spikes, CRMs and/or QCS samples fell within the established acceptance criteria with the exception of any items narrated above or flagged and described in the notes and definitions section of the report.

As an additional measure of the accuracy of the methods used and to check for matrix interference, matrix spikes (MS) and matrix spike duplicates (MSD) were digested and analyzed. All of the matrix spike recoveries fell within the established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

A reasonable measure of the precision of the analytical methods is the relative percent difference (RPD) between a matrix spike recovery

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette

3697 Mt. Diablo Blvd., Suite 150

Lafayette CA, 94549

Project: Gulf of Thailand Tissues

Project Number: SKLMKT

Project Manager: Theodore E. Donn, Jr, PhD

Reported:

18-Feb-22 16:05

and a matrix spike duplicate recovery and between laboratory control sample recovery and laboratory control sample duplicate recoveries. All of the relative percent differences established acceptance criteria with the exception of any items flagged and described in the notes and definitions section of the report.

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Page 7 of 28



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Sample Receipt Checklist

Client: Tetra Tech Date & Time Received: 1/7/22 11:00 Date Labeled: 1/7/22 Labeled By: ADK
Matrix: Tissues Received By: 12 Label Verified By: 1/7/22
of Coolers Received: 1 Samples Arrived By: X Shipping Service _____ Courier _____ Hand _____ Other (Specify: _____)

Coolant: ☐ None/Ambient ☐ Loose Ice ☐ Gel Ice ☒ Dry Ice Coolant Required: Y N Temp Blank Used: Y N for Cooler(s): _____

Notify Project Manager if packages/coolers are received without coolant or with thawed coolant and at a temperature in excess of 6°C. PM notified: Y N

Samples from Wisconsin have special requirements. Shipment received includes samples from Wisconsin: Y N

Cooler Information:	Y/N/NA	Comments
The coolers do not appear to be tampered with:	<u>Y</u>	
Custody Seals are present and intact:	<u>N</u>	
Custody seals signed:	<u>NA</u>	

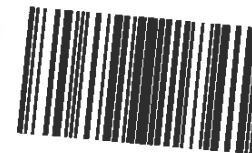
TID: <u>80187019</u> CF: <u>-0.5</u> °C	Date/time: <u>1/7/22 11:00</u> By: <u>12</u>
Cooler 1: <u>-1.2</u> °C w/ CF: <u>-1.7</u> °C	Cooler 4: °C w/ CF: °C
Cooler 2: °C w/ CF: °C	Cooler 5: °C w/ CF: °C
Cooler 3: °C w/ CF: °C	Cooler 6: °C w/ CF: °C

Chain of Custody:	Y/N/NA	Comments
Sample ID/Description:	<u>Y</u>	
Date and time of collection:	<u>Y</u>	
Sampled by:	<u>N</u>	
Preservation type:	<u>NA</u>	
Requested analyses:	<u>Y</u>	
Required signatures:	<u>Y</u>	
Internal COC required:	<u>NA</u>	

Sample Condition/Integrity:	Y/N/NA	Comments
Sample containers intact/present:	<u>Y</u>	
Sample labels are present and legible:	<u>Y</u>	
Sample ID on container/bag matches COC:	<u>Y</u>	
Correct sample containers used:	<u>Y</u>	
Samples received within holding times:	<u>Y</u>	
Sample volume sufficient for requested analyses:	<u>Y</u>	
Correct preservative used for requested analyses:	<u>Y</u>	

Anomalies/Non-conformances (attach additional pages if needed):

2A00039



Ship to:
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CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

General Notes:

Please report results separately for each Project ID (T423.02, T423.04, SKLMKT)
Please report all results to the MDL, J-flag results between MDL and RL
Please report results in PDF format with Excel EDD deliverable
Please INVOICE separately for each Project ID

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.02	CBWA-1121	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1121-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1181	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1182	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1183	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1183-DUP	FISH TISSUE	FROZEN	1	1	1
T423.02	CBWA-1184	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1204	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1205	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1206	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1207	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1222	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1244	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1246	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1247	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1248	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1249	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1250	FISH TISSUE	FROZEN	1		
T423.02	CBWA-1563	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1001	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1002	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1004-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1006	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1009	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1010	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1021	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1022	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1023	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1025	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1029	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1030	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1033	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1034	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1036	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1039	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1040	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1042	FISH TISSUE	FROZEN	1		

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CHAIN OF CUSTODY

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ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLCOM-1061	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1062	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1063	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1064	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1066-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1067	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1068	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1069	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1071	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1073	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1074	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1101	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1104	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1106	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1107	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1109	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1110	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1112	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1113	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1114	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1115	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1116	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1117	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1162	FISH TISSUE	FROZEN	1		
T423.04	PLCOM-1163	FISH TISSUE	FROZEN	1	1	
T423.04	PLCOM-1167	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1461	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1463-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1464	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1467	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1469	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1470	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1481	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1484	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1485	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1487	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1489	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1501	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1503	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1504	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1505	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
T423.04	PLWC-1506	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1507	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1508	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1509	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1510	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1511	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1512	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1514	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1515	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1525	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1542	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1542-DUP	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1544	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1545	FISH TISSUE	FROZEN	1	1	
T423.04	PLWC-1546	FISH TISSUE	FROZEN	1		
T423.04	PLWC-1081	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1082-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1084	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1086	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1087	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1088	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1089	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1090	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1091	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1092	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1093	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1095	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1261	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1266	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1267	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1283	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1285	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1286	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1289	FISH TISSUE	FROZEN	1	1	
T423.04	PLWE-1290	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1291	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1292	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1293	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1301	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1302	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1303	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1305	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-4 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, EPA 1638M)
T423.04	PLWE-1307	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1321	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1322	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1323	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1324	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1325-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1326	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1327	FISH TISSUE	FROZEN	1		
T423.04	PLWE-1328	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1343	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1343-DUP	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1344	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1345	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1346	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1346-DUP	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1348	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1349	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1350	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1352	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1353	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1354	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1355	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1356	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1359	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1381	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1384	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1385	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1386	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1388	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1401	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1403	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1404	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1406	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1407	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1409	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1410	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1421	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1422	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1423	FISH TISSUE	FROZEN	1		
T423.04	PLWG-1424	FISH TISSUE	FROZEN	1	1	
T423.04	PLWG-1425	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-001	FISH TISSUE	FROZEN	1		

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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-002	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-003	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-004	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-005	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-006	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-007	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-008	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-009	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-010	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-011	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-012	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-013	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-014	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-015	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-015-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-017	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-018	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-020	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-022	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-025	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-026	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-030	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-032	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-033	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-035	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-037	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-040	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-042	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-043	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-046	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-048	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-049	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-052	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-054	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-055-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-057	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-058	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-059	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-060	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-061	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-061-DUP	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-062	FISH TISSUE	FROZEN	1		

Relinquished by: Choyungwon V.

9 JAN 22

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12.17
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PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-4 (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-063	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-064	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-065	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-066	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-067	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-068	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-069	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-070	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-071	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-072	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-073	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-074	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-075	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-076	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-077	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-078	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-079	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-080	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-080-DUP	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-081	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-082	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-083	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-084	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-085	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-086	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-087	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-088	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-089	FISH TISSUE	FROZEN	1		

Relinquished by: Chayngoon V.

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R. Z. L.
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Ship to:

Patrick Garcia-Strickland
Eurofins - Frontier Global Sci.
5755 8th St. E
Fife, WA 98424
USA

CHAIN OF CUSTODY

Report to:
Dr. Ted Donn
Tetra Tech
3697 Mt. Diablo Blvd., ste 150
Lafayette, CA
ted.donn@tetratech.com

PROJECT	SampleID	MEDIUM	PRESERVATION	Hg-t (Tissue, EPA 1631B)	Total Inorganic Arsenic (Tissue, EPA 1632)	Barium (Tissue, 1638M)
SKLMKT	SKLMKT-090	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-091	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-092	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-093	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-094	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-095	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-096	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-097	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-098	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-098-DUP	FISH TISSUE	FROZEN	1	1	1
SKLMKT	SKLMKT-099	FISH TISSUE	FROZEN	1		
SKLMKT	SKLMKT-100	FISH TISSUE	FROZEN	1		

Relinquished by: Chayungoon V.

Relinquished by:

Received by:  4 JAN 22

Received by:

1/4/22 11:26



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5755 8th Street East
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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Barium

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2837 Nitric Tissue Digestion

SKLMKT-013	2A00039-13	0.034	0.004	0.039	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-015	2A00039-15	0.025	0.004	0.038	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-015-DUP	2A00039-16	0.021	0.004	0.039	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-035	2A00039-26	0.016	0.004	0.040	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-055	2A00039-36	0.019	0.004	0.037	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-055-DUP	2A00039-37	0.051	0.004	0.035	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	
SKLMKT-061	2A00039-42	0.026	0.004	0.036	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-077	2A00039-59	0.014	0.004	0.038	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-080	2A00039-62	0.022	0.004	0.035	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-098	2A00039-81	0.019	0.004	0.040	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J
SKLMKT-098-DUP	2A00039-82	0.022	0.004	0.039	mg/kg	1	F201360	20-Jan-22	2B01020	04-Feb-22	EPA 1638 Mod	J

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Patrick Garcia-Strickland, Business Unit Manager

Page 16 of 28



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5755 8th Street East
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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Inorganic Arsenic

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
Sample Preparation: EFGS SOP2993 Speciation Oven Digestion for Solids												
SKLMKT-013	2A00039-13	ND	0.007	0.010	mg/kg	10	F201368	24-Jan-22	2A26010	25-Jan-22	EPA 1632	U, QM-12
SKLMKT-015	2A00039-15	ND	0.007	0.010	mg/kg	10	F201368	24-Jan-22	2A26010	25-Jan-22	EPA 1632	U, QM-12
SKLMKT-015-DUP	2A00039-16	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-035	2A00039-26	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-055	2A00039-36	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-055-DUP	2A00039-37	ND	0.021	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-061	2A00039-42	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-077	2A00039-59	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-080	2A00039-62	ND	0.020	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-098	2A00039-81	ND	0.021	0.030	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U
SKLMKT-098-DUP	2A00039-82	ND	0.021	0.029	mg/kg	30	F201368	24-Jan-22	2A26013	26-Jan-22	EPA 1632	U

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Patrick Garcia-Strickland, Business Unit Manager

Page 17 of 28

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Mercury


Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

SKLMKT-001	2A00039-01	1110	4.22	47.1	ng/g	1000	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-002	2A00039-02	390	0.872	9.73	ng/g	200	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-003	2A00039-03	805	2.13	23.8	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-004	2A00039-04	689	2.17	24.2	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-005	2A00039-05	821	2.05	22.9	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-006	2A00039-06	669	2.19	24.5	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-007	2A00039-07	625	2.14	23.9	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-008	2A00039-08	1370	4.43	49.5	ng/g	1000	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-009	2A00039-09	585	2.18	24.3	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-010	2A00039-10	749	2.23	24.9	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-011	2A00039-11	746	2.14	23.9	ng/g	500	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-012	2A00039-12	1010	4.14	46.2	ng/g	1000	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-014	2A00039-14	1070	4.17	46.5	ng/g	1000	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-017	2A00039-17	209	0.881	9.83	ng/g	200	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-018	2A00039-18	343	0.809	9.03	ng/g	200	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-020	2A00039-19	254	0.819	9.14	ng/g	200	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-022	2A00039-20	348	0.839	9.36	ng/g	200	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-025	2A00039-21	153	0.413	4.60	ng/g	100	F201347	20-Jan-22	2A28001	27-Jan-22	EPA 1631B	
SKLMKT-026	2A00039-22	208	1.74	19.4	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-030	2A00039-23	72.8	0.205	2.28	ng/g	50	F201348	20-Jan-22	2B03016	02-Feb-22	EPA 1631B	
SKLMKT-032	2A00039-24	116	0.420	4.69	ng/g	100	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-033	2A00039-25	183	1.73	19.3	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-037	2A00039-27	25.0	0.089	0.988	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-040	2A00039-28	35.1	0.089	0.990	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-042	2A00039-29	23.4	0.087	0.968	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-043	2A00039-30	66.6	0.221	2.47	ng/g	50	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-046	2A00039-31	183	1.78	19.9	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-048	2A00039-32	27.1	0.089	0.990	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-049	2A00039-33	21.3	0.088	0.986	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-052	2A00039-34	23.0	0.088	0.981	ng/g	20	F201348	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-054	2A00039-35	151	1.64	18.3	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-057	2A00039-38	478	1.73	19.3	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	

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Patrick Garcia-Strickland, Business Unit Manager

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

SKLMKT-058	2A00039-39	530	1.72	19.1	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-059	2A00039-40	232	1.73	19.3	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-060	2A00039-41	274	1.72	19.2	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-061-DUP	2A00039-43	381	1.67	18.6	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-062	2A00039-44	514	1.66	18.5	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-063	2A00039-45	203	1.76	19.6	ng/g	400	F201348	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-064	2A00039-46	323	1.75	19.5	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-065	2A00039-47	172	1.79	20.0	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-066	2A00039-48	171	1.71	19.0	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-067	2A00039-49	90.3	0.216	2.42	ng/g	50	F201349	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-068	2A00039-50	179	1.73	19.3	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-069	2A00039-51	307	1.68	18.7	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-070	2A00039-52	103	0.223	2.49	ng/g	50	F201349	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-071	2A00039-53	493	1.77	19.8	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-072	2A00039-54	221	1.73	19.3	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-073	2A00039-55	350	1.73	19.3	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-074	2A00039-56	263	1.63	18.2	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-075	2A00039-57	422	1.70	19.0	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-076	2A00039-58	159	1.77	19.8	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-078	2A00039-60	170	1.70	18.9	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-079	2A00039-61	46.7	0.207	2.31	ng/g	50	F201349	20-Jan-22	2A31014	28-Jan-22	EPA 1631B	
SKLMKT-080-DUP	2A00039-63	319	1.73	19.3	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-081	2A00039-64	252	1.66	18.6	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-082	2A00039-65	248	1.65	18.4	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-083	2A00039-66	604	1.78	19.8	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-084	2A00039-67	869	1.73	19.3	ng/g	400	F201349	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-085	2A00039-68	566	1.71	19.1	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-086	2A00039-69	713	1.61	18.0	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-087	2A00039-70	339	1.68	18.8	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-088	2A00039-71	222	1.78	19.9	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-089	2A00039-72	1020	1.69	18.9	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-090	2A00039-73	751	1.74	19.5	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	

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Patrick Garcia-Strickland, Business Unit Manager



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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Mercury

Sample Name	Lab Number	Result	Detection Limit	Reporting Limit	Units	Dilution	Batch	Prepared	Sequence	Analyzed	Method	Notes
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Sample Preparation: EFGS SOP2795 Nitric/Sulfuric Hg Digestion

SKLMKT-091	2A00039-74	693	1.66	18.5	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-092	2A00039-75	277	1.61	18.0	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-093	2A00039-76	162	1.76	19.6	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-094	2A00039-77	51.6	1.65	18.5	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-095	2A00039-78	787	1.66	18.5	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-096	2A00039-79	337	1.62	18.0	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-097	2A00039-80	115	1.69	18.8	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-099	2A00039-83	94.4	1.78	19.9	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	
SKLMKT-100	2A00039-84	75.0	1.68	18.8	ng/g	400	F201350	20-Jan-22	2A27017	27-Jan-22	EPA 1631B	

Sample Preparation: EFGS SOP2837 Nitric Tissue Digestion

SKLMKT-013	2A00039-13	1370	21.0	78.9	ng/g	400	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	
SKLMKT-015	2A00039-15	896	10.1	37.9	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-015-DUP	2A00039-16	889	10.2	38.6	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-035	2A00039-26	133	2.6	9.9	ng/g	50	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	
SKLMKT-055	2A00039-36	128	2.4	9.2	ng/g	50	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	
SKLMKT-055-DUP	2A00039-37	124	2.3	8.8	ng/g	50	F201361	20-Jan-22	2A31014	28-Jan-22	EPA 1631 Mod	
SKLMKT-061	2A00039-42	327	9.7	36.4	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-077	2A00039-59	508	10.1	38.0	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-080	2A00039-62	292	9.4	35.3	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-098	2A00039-81	914	10.5	39.7	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	
SKLMKT-098-DUP	2A00039-82	949	10.4	39.3	ng/g	200	F201361	20-Jan-22	2A28001	27-Jan-22	EPA 1631 Mod	

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Patrick Garcia-Strickland, Business Unit Manager

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Frontier Global Sciences

5755 8th Street East
Tacoma, WA 98424
Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201347 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201347-BLK1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.224	0.090	1.00	ng/g							J
Blank (F201347-BLK2)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.193	0.090	1.00	ng/g							J
Blank (F201347-BLK3)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	0.174	0.090	1.00	ng/g							J
LCS (F201347-BS1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	406.0	1.79	20.0	ng/g	401.60		101	75-125			
LCS Dup (F201347-BSD1)					Prepared: 20-Jan-22 Analyzed: 25-Jan-22						
Mercury	401.3	1.79	20.0	ng/g	401.60		99.9	75-125	1.18	24	
Matrix Spike (F201347-MS1)					Source: 2A00038-BU		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	454.6	1.77	19.7	ng/g	395.90	50.64	102	71-125			
Matrix Spike (F201347-MS2)					Source: 2A00038-BV		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	424.5	1.69	18.9	ng/g	379.30	53.63	97.8	71-125			
Matrix Spike Dup (F201347-MSD1)					Source: 2A00038-BU		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	433.2	1.75	19.5	ng/g	391.42	50.64	97.7	71-125	4.31	24	
Matrix Spike Dup (F201347-MSD2)					Source: 2A00038-BV		Prepared: 20-Jan-22 Analyzed: 25-Jan-22				
Mercury	407.9	1.67	18.6	ng/g	374.35	53.63	94.6	71-125	3.26	24	

Batch F201348 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201348-BLK1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	0.500	0.090	1.00	ng/g							J

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Patrick Garcia-Strickland, Business Unit Manager



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Phone: (253) 922-2310

Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201348 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201348-BLK2)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201348-BLK3)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201348-BS1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	382.4	1.79	20.0	ng/g	401.60		95.2	75-125			
LCS Dup (F201348-BSD1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	378.0	1.79	20.0	ng/g	401.60		94.1	75-125	1.16	24	
Matrix Spike (F201348-MS1)					Source: 2A00039-22		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	601.4	1.77	19.7	ng/g	395.90	207.6	99.5	71-125			
Matrix Spike (F201348-MS2)					Source: 2A00039-23RE1		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	444.6	1.74	19.4	ng/g	389.00	69.84	96.3	71-125			
Matrix Spike Dup (F201348-MSD1)					Source: 2A00039-22		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	545.0	1.71	19.1	ng/g	382.91	207.6	88.1	71-125	12.1	24	
Matrix Spike Dup (F201348-MSD2)					Source: 2A00039-23RE1		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	449.2	1.72	19.2	ng/g	385.12	69.84	98.5	71-125	2.22	24	

Batch F201349 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201349-BLK1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201349 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201349-BLK2)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201349-BLK3)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201349-BS1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	388.0	1.79	20.0	ng/g	401.60		96.6	75-125			
LCS Dup (F201349-BSD1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	380.2	1.79	20.0	ng/g	401.60		94.7	75-125	2.05	24	
Matrix Spike (F201349-MS1)					Source: 2A00039-46		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	666.5	1.65	18.4	ng/g	369.12	322.5	93.2	71-125			
Matrix Spike (F201349-MS2)					Source: 2A00039-47		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	532.1	1.74	19.4	ng/g	390.21	171.9	92.3	71-125			
Matrix Spike Dup (F201349-MSD1)					Source: 2A00039-46		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	646.5	1.77	19.7	ng/g	395.59	322.5	81.9	71-125	12.9	24	
Matrix Spike Dup (F201349-MSD2)					Source: 2A00039-47		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	523.9	1.79	20.0	ng/g	401.12	171.9	87.7	71-125	5.07	24	

Batch F201350 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201350-BLK1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U

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3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201350 - EFGS SOP2795 Nitric/Sulfuric Hg Digestion

Blank (F201350-BLK2)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
Blank (F201350-BLK3)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.090	1.00	ng/g							U
LCS (F201350-BS1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	390.6	1.79	20.0	ng/g	401.60		97.3	75-125			
LCS Dup (F201350-BSD1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	391.9	1.79	20.0	ng/g	401.60		97.6	75-125	0.320	24	
Matrix Spike (F201350-MS1)					Source: 2A00039-68		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	991.2	2.23	24.9	ng/g	400.16	566.1	106	71-125			
Matrix Spike (F201350-MS3)					Source: 2A00039-69		Prepared: 20-Jan-22 Analyzed: 28-Jan-22				
Mercury	914.2	2.10	23.4	ng/g	376.59	713.1	53.4	71-125			QM-02
Matrix Spike Dup (F201350-MSD1)					Source: 2A00039-68		Prepared: 20-Jan-22 Analyzed: 27-Jan-22				
Mercury	1013	2.17	24.2	ng/g	388.85	566.1	115	71-125	7.82	24	
Matrix Spike Dup (F201350-MSD3)					Source: 2A00039-69		Prepared: 20-Jan-22 Analyzed: 28-Jan-22				
Mercury	981.8	2.14	23.8	ng/g	383.06	713.1	70.1	71-125	27.1	24	QM-02, QR-08

Batch F201360 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201360-BLK1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	0.012	0.004	0.040	mg/kg							J

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201360 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201360-BLK2)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	0.017	0.004	0.040	mg/kg							J
LCS (F201360-BS1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	4.905	0.004	0.040	mg/kg	5.0000		98.1	85-115			
LCS Dup (F201360-BSD1)					Prepared: 20-Jan-22 Analyzed: 04-Feb-22						
Barium	4.957	0.004	0.040	mg/kg	5.0000		99.1	85-115	1.06	20	
Matrix Spike (F201360-MS1)					Source: 2A00037-01		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.978	0.004	0.037	mg/kg	4.6074	0.121	105	80-120			
Matrix Spike (F201360-MS2)					Source: 2A00039-13		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.522	0.004	0.037	mg/kg	4.6538	0.034	96.4	80-120			
Matrix Spike Dup (F201360-MSD1)					Source: 2A00037-01		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.870	0.004	0.040	mg/kg	4.9485	0.121	96.0	80-120	9.37	20	
Matrix Spike Dup (F201360-MSD2)					Source: 2A00039-13		Prepared: 20-Jan-22 Analyzed: 04-Feb-22				
Barium	4.202	0.003	0.035	mg/kg	4.3569	0.034	95.7	80-120	0.804	20	

Batch F201361 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201361-BLK1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U
Blank (F201361-BLK2)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201361 - EFGS SOP2837 Nitric Tissue Digestion

Blank (F201361-BLK3)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	ND	0.5	2.0	ng/g							U
LCS (F201361-BS1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	382.7	10.6	40.0	ng/g	401.60		95.3	75-125			
LCS Dup (F201361-BSD1)					Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	395.2	10.6	40.0	ng/g	401.60		98.4	75-125	3.21	24	
Matrix Spike (F201361-MS1)		Source: 2A00037-01			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	810.6	9.8	36.9	ng/g	370.07	462.2	94.1	71-125			
Matrix Spike (F201361-MS2)		Source: 2A00039-13RE1			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	1846	19.8	74.5	ng/g	373.79	1374	126	71-125			QM-02
Matrix Spike Dup (F201361-MSD1)		Source: 2A00037-01			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	827.7	10.5	39.6	ng/g	397.47	462.2	91.9	71-125	2.36	24	
Matrix Spike Dup (F201361-MSD2)		Source: 2A00039-13RE1			Prepared: 20-Jan-22 Analyzed: 27-Jan-22						
Mercury	1918	18.5	69.7	ng/g	349.95	1374	155	71-125	20.6	24	QM-02, QR-08

Batch F201368 - EFGS SOP2993 Speciation Oven Digestion for Solids

Blank (F201368-BLK1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U
Blank (F201368-BLK2)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	ND	0.007	0.010	mg/kg							U

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Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Quality Control Data

Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch F201368 - EFGS SOP2993 Speciation Oven Digestion for Solids

LCS (F201368-BS1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	0.095	0.007	0.010	mg/kg	0.10000		94.9	50-150			
LCS Dup (F201368-BSD1)					Prepared: 24-Jan-22 Analyzed: 25-Jan-22						
Inorganic Arsenic	0.098	0.007	0.010	mg/kg	0.10000		97.9	50-150	3.09	35	
Matrix Spike (F201368-MS1)					Source: 2A00039-13		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.076	0.007	0.010	mg/kg	0.099741	ND	76.2	50-150			
Matrix Spike (F201368-MS2)					Source: 2A00039-15		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.070	0.007	0.010	mg/kg	0.099542	ND	69.9	50-150			
Matrix Spike Dup (F201368-MSD1)					Source: 2A00039-13		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.062	0.007	0.010	mg/kg	0.096283	ND	64.0	50-150	17.4	35	
Matrix Spike Dup (F201368-MSD2)					Source: 2A00039-15		Prepared: 24-Jan-22 Analyzed: 25-Jan-22				
Inorganic Arsenic	0.083	0.007	0.010	mg/kg	0.099206	ND	83.7	50-150	17.9	35	

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Tetra Tech, Inc. Lafayette
3697 Mt. Diablo Blvd., Suite 150
Lafayette CA, 94549

Project: Gulf of Thailand Tissues
Project Number: SKLMKT
Project Manager: Theodore E. Donn, Jr, PhD

Reported:
18-Feb-22 16:05

Notes and Definitions

U	Analyte was not detected and is reported as less than the LOD or as defined by the client. The LOD has been adjusted for any dilution or concentration of the sample.
QR-08	The RPD value for the MS/MSD was outside of acceptance limits. Batch QC acceptable based on matrix duplicate and/or LCS/LCSD RPD values within control limits.
QM-12	Continuing calibration verification (CCV) and/or blank spike/blank spike duplicate (BS/BSD) recoveries above upper control limits. All reported sample concentrations were below the reporting limit.
QM-02	The MS and/or MSD recoveries outside acceptance limits, due to spike concentration less than 1 times the sample concentration. The batch was accepted based on LCS and LCSD recoveries within control limits and, when analysis permits, acceptable AS/ASD.
J	The result is an estimated concentration.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Chemical storage tank and Oil spill equipment on PLCPP1				
No	DESCRIPTION	Location	PICTURE	Storage quanity
1	Glycol Triethylene storage tank	Upper Deck		530 gallons
2	VRC lube oil VDL-100 storage tank	Mezzanine Deck		40 gallons
3	Hot oil Texathern HT22 storage tank	Top Deck		475 gallons
4	TRIETHYLENE GLYCOL (Drum/Pallet)	Top Deck		16 Drums
5	Shell Aeroshell Turbine Oil	Cellar Deck		100 Q
6	Demul, DMO87021 storage tank (BGHE)	Cellar Deck		500 gallons
7	PPD, PAO85605 storage tank (BGHE)	Cellar Deck		400 gallons
8	Corrosion INHIBITOR, CRO80157 storage tank (BGHE)	Cellar Deck		400 gallons
9	Oil spill equipment cabinet	Cellar Deck Upper deck		2 Cabinets



PLCPP. FIRE FIGHTING AND SAFETY EQUIPMENTS INSPECTION RECORD

DATE
BY4 Feb 20
W. J. J. J. J.

AREA	REF. No.	EQUIPMENT TYPE	Quantity	WORK REQUIRED		REMARKS
				YES	NO	
CABINET OIL SPILL EQUIPMENT ON TOP DECK		CHEMICAL SUIT	3 EA		/	
		HAFT FACE RESPIRATOR	3 EA		/	
		RUBBER BOOT	4 PAIRE		/	
		ABSORBENT PAD	4 Pack.		/	
		RUBBER GROVE	2 PAIRE		/	
		PLASTIC BAG	12 EA		/	
		RAG	1 PACK		/	
		BARRICADE TAPE	1 ROLL		/	
		3 M PETROLEUM RECOVER	1 BOX		/	
		PLASTIC CHEMICAL RECOVER	1EA		/	
		UNIVERSAL ABSORBENT PAT	1 BAG		/	
CABINET OIL SPILL EQUIPMENT ON CELLAR DECK		CHEMICAL SUIT	3 EA		/	
		HAFT FACE RESPIRATOR	3 EA		/	
		RUBBER BOOT	4 PAIRE		/	
		ABSORBENT PAD	4 Pack.		/	
		RUBBER GROVE	2 PAIRE		/	
		PLASTIC BAG	12 EA		/	
		RAG	1 PACK		/	
		BARRICADE TAPE	1 ROLL		/	
		3 M PETROLEUM RECOVER	1 BOX		/	
		PLASTIC CHEMICAL RECOVER	1EA		/	
		UNIVERSAL ABSORBENT PAT	1 BAG		/	

CHECKLIST :

MONTHLY : VISUAL INSPECTION FOR DAMAGE, DETERIORATION, ACCESS
 MAKE SURE THAT ITS SEAL HAS NOT BEEN BROKEN
 OPERATE NOZZLE HANDLE TO CHECK FOR FREE MOVEMENT
 INSURE THAT APPROACH IS FREE OF OBSTRUCTIONS
 HOSE REEL: INSURE THAT HOSE REEL ROTATES FREELY & IS LUBRICATED THOROUGHLY
 INSURE THAT ALL CONNECTION ARE TIGHT, NO LEAKS WHEN UNDER PRESSURE
 INSPECT HOSE/NOZZLE FOR ANY RIPS, BREAKS, DAMAGE, NOZZLE SHUT-OFF
 NOZZLE/SUPPLY VALVE OPERATED FREELY

CHEMICAL AND WASTE INSPECTION CHECKLIST

Ver. 2013/01

Survey Date: 4 Feb 2019

By: Wuttithai S.

Location/Area: PLCPPI

Inspection Items	Yes	No	N/A	Comments
1. Chemical List (รายการสารเคมี) • Chemical list is available in the storage area e.g. Store, chemical storage cabinets, etc. indicating chemical name and storage location. (จัดให้มีการสารเคมีที่ใช้งานอยู่ในบริเวณสถานที่จัดเก็บ เช่น Store และนำสู่ที่มีการเก็บสารเคมีที่ตรงกับข้อมูลสารเคมีและสถานที่จัดเก็บ)	/			
2. MSDS (ข้อมูลความปลอดภัยของเคมีภัณฑ์) • MSDS document of chemicals are available at working or storage location e.g. Store, Control Room, Mechanic Shop, and Lab in an orderly manner. (จัดให้มีการข้อมูลความปลอดภัยของเคมีภัณฑ์ที่ใช้งานและสถานที่จัดเก็บ เช่น Store, Control Room, Mechanic Shop และ Lab ที่สามารถค้นหาสารเคมีได้อย่างรวดเร็วและมีระเบียบ)	/			
3. Containers (ภาชนะบรรจุสารเคมี/ของเสีย) • Containers are in good condition, e.g. metal drum is not rusty or distorted, plastic drum is not torn or distorted, the color is not faded or changed, and the container does not bulge that could cause a spill or leakage. (ภาชนะบรรจุอยู่ในสภาพดี เช่น ถังเหล็กไม่สนิมหรือบิดเบี้ยว ถังพลาสติกไม่ฉีกขาดหรือเปลี่ยนสี ไม่บวมหรือเปลี่ยนรูปร่างจนอาจก่อให้เกิดการรั่วซึมได้) • Keep containers of chemical/wastes that can vaporize closed unless being used. (ภาชนะบรรจุสารเคมีหรือของเสียที่ระเหยได้ เช่น น้ำมันโซลันท์ ของเสียเป็นของเหลว จะต้องปิดฝาทันทีเมื่อไม่ได้นำไปใช้) • Dispensed containers must be appropriate according to chemical types, e.g. use closed top metal drum for oil/thinner; use plastic bottle and metal box as inner and outer packages for elemental mercury, respectively. (ภาชนะบรรจุสารเคมีที่กระจายตามประเภทของสารเคมีที่บรรจุ เช่น ใช้ถังเหล็กสำหรับน้ำมันหรือทินเนอร์ ใช้ขวดพลาสติกสำหรับของเหลวระเหยง่าย และใช้กล่องโลหะสำหรับสารปรอท) • Waste containers must be appropriate according to waste types, e.g. use metal drum (200L) for used oil/thinner or oily rags; use metal box for used fluorescent lamp; use plastic UN drum closed top for mercury contaminated material. (ภาชนะบรรจุของเสียที่เหมาะสมกับประเภทของเสียที่บรรจุ เช่น ใช้ถังเหล็กสำหรับน้ำมัน, ถังเบเรลล์สำหรับของเหลวระเหยง่าย หรือใช้ถังพลาสติกสำหรับของเสียที่เป็นของแข็ง) • Chemical/Waste containers have the Chevron standard labels attached for each chemical/waste and remove all other labels if recycle drum was used. The label should also be in good condition, not faded or torn, and easy to read. These also apply to all dispensed containers used to take chemical from original container or drum. (ภาชนะบรรจุสารเคมีหรือของเสียมีฉลากมาตรฐานของเชฟรอนติดอยู่ตามภาชนะบรรจุโดยฉลากต้องอยู่ในสภาพที่ดี ปรากฏข้อความ และสามารถอ่านได้ชัดเจนหากมีการนำภาชนะบรรจุไปนำของเสียจากถังเดิมออก ทั้งนี้ไม่รวมทั้งภาชนะแบ่งขายสารเคมีด้วย)	/	/	/	
5. Chemical and Waste Storage and Handling (การจัดเก็บสารเคมีและของเสีย) • Chemical storage area is dry, cool (not extreme temperature), and well ventilated. (สถานที่เก็บสารเคมีจะต้องแห้ง, ไม่ร้อนจัด และมีการระบายอากาศที่ดี) • Not keeping the expired or not used chemical at offshore and need to send out the expired chemical to dispose at onshore. (ไม่เก็บสารเคมีที่หมดอายุหรือไม่มีการใช้แล้วไว้ที่ Offshore และต้องดำเนินการส่งสารเคมีที่หมดอายุไปกำจัดบนฝั่ง) • Flammable chemicals are stored in flammable cabinets and labeled properly. These also apply to all dispensed containers used to take chemical from original container or drum. (สารเคมีไวไฟต้องเก็บไว้ในตู้เก็บเฉพาะและต้องฉลากติดไว้ว่าของเหลวต้องเก็บเฉพาะ รวมทั้งภาชนะแบ่งขายสารเคมีด้วย) • Compressed gases cylinders are stored upright and properly chained at all times, including empty cylinders. (ถังบรรจุก๊าซความดันจะต้องตั้งตรงและมีการติดสายโซ่อย่างเหมาะสมตลอดเวลา รวมถึงถังเปล่าด้วย) • Compressed gas cylinders capped properly, secured and not stored incompatible materials e.g. oxygen and acetylene together when not in use. (ถังบรรจุก๊าซที่ไม่ได้ใช้จะต้องมีฝาปิดให้เรียบร้อยและไม่จัดเก็บถังก๊าซที่ไม่เข้าพวก เช่น ถังก๊าซออกซิเจน และ ถังก๊าซอะเซทิลีนไว้ด้วยกัน) • Incompatible chemical/wastes must be stored separately; e.g. corrosive and flammable or corrosive and oxidizing agents together where spills can find their way to mix with each other resulting in fire or toxic gas. (ของเสียที่ไม่เข้ากันได้ต้องเก็บไว้แยกจากกัน เช่น สารกัดกร่อนกับสารไวไฟ หรือ สารกัดกร่อนกับสารออกซิไดซ์ ซึ่งถ้ามีการหกหรือรั่วไหลอาจมีโอกาสมาสัมผัสกันหรือผสมกัน แล้วทำให้เกิดสารพิษหรือไฟไหม้) • Onsite spill response kits are available and inspected on the availability of all response kits. (มีอุปกรณ์สำหรับจัดการในกรณีสารเคมีหรือของเสียหกซึมบนพื้น และอุปกรณ์มีอยู่ตลอดเวลา) • Secondary containment is provided if the spill can find its way getting directly to outside environment (sea, soil, waterbody) following secondary containment screening process in TSP-33. (มีภาชนะรองรับที่เก็บสารเคมีตามขั้นตอนการคัดเลือกรับรองรับที่กำหนดไว้ใน TSP-33 ถ้าสารเคมีหรือของเสียสามารถไหลลงสู่สิ่งแวดล้อมภายนอกได้โดยตรง เช่น ลงสู่ทะเล ดิน) • Emergency eye wash/shower station are available and functioning e.g. water pressure, water cleanliness. (ที่ล้างตาฉุกเฉินและฝักบัวฉุกเฉินสามารถใช้งานได้ เช่น แรงดันน้ำ ความสะอาดของน้ำ เป็นต้น) • Waste must be segregated in appropriate containers according to their types, e.g. recyclable waste (glass, paper, aluminium can, plastic bottles, etc); hazardous wastes (used oil, Hg contaminated sludge, paint cans, used filter, fluorescent lamp, used PPE, contaminated material, infectious waste, etc.) (ของเสียจะต้องถูกคัดแยกไว้ในภาชนะที่เหมาะสมตามประเภทของเสีย เช่น วัสดุรีไซเคิล (แก้ว กระดาษ กระป๋องอลูมิเนียม ขวดพลาสติก เป็นต้น), ของอันตราย (น้ำมันใช้แล้ว ถังหลอดฟลูออเรสเซนต์ ปฏิกิริยา กระป๋องสี ถังกรองที่ใช้งานแล้ว ถังของเหลวไฮดรอลิก PPE ที่ใช้งานแล้ว วัสดุที่เป็นของเสีย) • All chemical/waste shall be stored in an orderly manner according to good housekeeping practices, with no undesirable odor, isachate, or pests. (พื้นที่จัดเก็บสารเคมีหรือของเสียต้องสะอาด ปราศจากกลิ่น และแมลงรบกวน)	/	/	/	

Reference: TSP-33 <C:\Users\cgvd\Links\HAZCOM Process\TSP-33 Chemical Handling and Storage.docx>

Application : Conduct plant inspection by using this checklist at least on monthly basis

: HESS to support for this inspection. However, it is a good tool for other sectors to conduct inspection by using this checklist as well.

INTERNATIONAL SEWAGE POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of
the International Convention for the Prevention of Pollution from Ships, 1973
as modified by the Protocol of 1978 relating thereto,
and as amended by resolution MEPC.115(51), (hereinafter referred to as "the Convention")
under the authority of the Government of:

The Commonwealth of the Bahamas

(name of state)

by American Bureau of Shipping

Particulars of Ship:

Name of ship	Distinctive number or letters	Port of Registry
PATTANI	732012 C6FJ5	Nassau
Gross tonnage	Number of persons which the ship is certified to carry	IMO Number ¹
59289	52	8615825

~~New Ship~~ / Existing Ship *

Type of ship for the application of regulation 11.3:*

~~New / Existing Passenger ship~~ *

Ship other than a passenger ship

Date on which keel was laid or ship was at a similar stage of construction or where applicable, date on which work for a conversion or an alteration or modification of a major character was commenced 14 November 2003

THIS IS TO CERTIFY:

- (1) That the ship is equipped with a Sewage Treatment Plant / ~~Comminuter~~ / ~~Holding Tank~~ * and a discharge pipeline in compliance with regulations 9 and 10 of Annex IV of the Convention as follows:

*(1.1) Description of the sewage treatment plant :

Type of sewage treatment plant AEROB-18 (BIO DATA)

Name of manufacturer Aquachem Industriall Wasserbehandlung GbmH, Federal Republic of Germany

The sewage treatment plant is certified by the Administration to meet the effluent standards as provided for in resolution MEPC.2(VI).

~~*(1.2) Description of comminuter:~~

Type of comminuter N/A

Name of manufacturer N/A

Standard of sewage after disinfection N/A

~~*(1.3) Description of holding tank:~~

Total capacity of the holding tank N/A m³

Location N/A

- (1.4) A pipeline for the discharge of sewage to a reception facility, fitted with a standard shore connection.

* Delete as appropriate

¹ In accordance with resolution A.600(15) - IMO Ship Identification Number Scheme, this information may be included voluntarily

- (2) The ship has been surveyed in accordance with regulation 4 of Annex IV of the Convention.
- (3) That the survey shows that the structure, equipment, systems, fittings, arrangements and material of the ship and the condition thereof are in all respects satisfactory and the ship complies with the applicable requirements of Annex IV of the Convention.


N/A


This certificate is valid until 05 April 2024² subject to surveys in accordance with regulation 4 of Annex IV of the Convention.

Completion date of the survey on which this certificate is based: 26 February 2019

Issued at Offshore, Gulf of Thailand on 09 May 2019




Electronically Signed By
Srisungval, Manop, Bangkok Port
(Surveyor, American Bureau of Shipping)

A circular stamp with "ABS" at the top and "BANGKOK" at the bottom, containing a stylized eagle emblem in the center.

² Insert the date of expiry as specified by the Administration in accordance with regulation 8.1 of Annex IV of the Convention. The day and the month of this date correspond to the anniversary date as defined in regulation 1.8 of Annex IV of the Convention.

Endorsement to extend the Certificate if valid for less than 5 years where regulation 8.3 applies.

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation 8.3 of Annex IV of the Convention, be accepted as valid until _____.

Signed: _____
(Signature of authorized official)

Place: _____

(Seal or Stamp of the authority, as appropriate) Date: _____

Endorsement where the renewal survey has been completed and regulation 8.4 applies.

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with regulation 8.4 of Annex IV of the Convention, be accepted as valid until _____.

Signed: _____
(Signature of authorized official)

Place: _____

(Seal or Stamp of the authority, as appropriate) Date: _____

Endorsement where the renewal survey has been completed and regulation 8.5 or 8.6 applies.

This Certificate shall, in accordance with regulation 8.5 or 8.6 of Annex IV of the Convention, be accepted as valid until _____.

Signed: _____
(Signature of authorized official)

Place: _____

(Seal or Stamp of the authority, as appropriate) Date: _____





Certificate No.: 88141165-4215840-190

INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE

Issued under the provisions of
the Protocol of 1997, as amended by resolution MEPC.176(58) in 2008,
to amend the International Convention for the Prevention of Pollution from
Ships, 1973, as modified by the Protocol of 1978 related thereto
(hereinafter referred to as "the Convention")
under the authority of the Government of:

The Commonwealth of the Bahamas

(name of state)

by American Bureau of Shipping

Particulars of Ship

Name of Ship		Distinctive Number or Letters	
PATTANI		732012 C6FJ5	
IMO Number ¹	Port of Registry	Gross Tonnage	
8615825	Nassau	59289	

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with regulation 5 of Annex VI of the Convention; and
2. That the survey shows that the equipment, systems fittings, arrangements and materials fully comply with the applicable requirements of Annex VI of the Convention.

This Certificate is valid only when Supplement IAPPC-VI 2008 issued at Offshore, Gulf Of Thailand
on 08 May 2020 is attached.

This certificate is valid until 05 April 2024 ² subject to surveys in accordance with regulation 5 of Annex VI of the Convention.

Completion date of the survey on which this certificate is based: 26 February 2019
Issued at Offshore, Gulf Of Thailand on 08 May 2020
(Place of Issue of Certificate) (Date of Issue)



Electronically Signed By
Banthad, Chetraphi, Bangkok Port
Surveyor, American Bureau of Shipping

¹ In accordance with IMO ship identification number scheme, adopted by the Organization by resolution A.600(15).

² Insert the date of expiry as specified by the Administration in accordance with regulation 9.1 of Annex VI of the Convention. The day and month of this date correspond to the anniversary date as defined in regulation 2.3 of Annex VI of the Convention, unless amended in accordance with regulation 9.8 of Annex VI of the Convention.

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that, at a survey required by Regulation 5 of Annex VI of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey:

Signed:



Banthad, Chetraphi, Bangkok Port

(Surveyor, American Bureau of Shipping)

Place:

Offshore, Gulf Of Thailand

Date:

08 May 2020

Annual / Intermediate³ Survey:

Signed:

CHANCHAI C.



(Surveyor, American Bureau of Shipping)

Place:

OFFSHORE, GULF OF THAILAND

Date:

08 FEBRUARY 2021

Annual / Intermediate³ Survey:

Signed:

(Surveyor, American Bureau of Shipping)

Place:

Date:

Annual Survey:

Signed:

(Surveyor, American Bureau of Shipping)

Place:

Date:



³ Delete as appropriate

SUPPLEMENT TO
INTERNATIONAL AIR POLLUTION PREVENTION CERTIFICATE
(IAPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT

Notes:

1. This Record shall be permanently attached to the IAPP Certificate. The IAPP Certificate shall be available on board the ship at all times.
2. The Record shall be at least in English, French or Spanish. If an official language of the issuing country is also used, this shall prevail in case of a dispute or discrepancy.
3. Entries in boxes shall be made by inserting either a cross (x) for the answer "yes" and "applicable" or a (-) for the answers "no" and "not applicable" as appropriate.
4. Unless otherwise stated, regulations mentioned in this Record refer to regulations of Annex VI of the Convention and resolutions or circulars refer to those adopted by the International Maritime Organization.

1 Particulars of ship

- 1.1 Name of ship: PATTANI
- 1.2 IMO number: 8615825
- 1.3 Date on which keel was laid or ship was at a similar stage of construction: 19 October 1987
- 1.4 Length (L)* metres: N/A

* Completed only in respect of ships constructed on or after 1 January 2016 that are specially designed, and used solely for recreational purposes and to which, in accordance with regulation 13.5.2.1 or regulation 13.5.2.3, the NOx emission limit as given by regulation 13.5.1.1 will not apply.

2 Control of emissions from ships

2.1 Ozone-depleting substances (regulation 12)

2.1.1 The following fire-extinguishing systems, other systems and equipment containing ozone-depleting substances, other than hydrochlorofluorocarbons (HCFCs), installed before 19 May 2005 may continue in service:

[illegible]

2.1.2 The following systems containing hydrochlorofluorocarbons (HCFCs) installed before 1 January 2020 may continue in service:

[illegible]

2.2 Nitrogen oxides (NO_x) (regulation 13)

2.2.1 The following marine diesel engines installed on this ship are in accordance with the requirements of regulation 13, as indicated:

Applicable regulation of MARPOL Annex VI (NTC = NO _x Technical Code 2008) (AM = Approved Method)			Engine #1	Engine #2	Engine #3	Engine #4	Engine #5	Engine #6	Engine #7	Engine #8
1	Manufacturer and model		-	-	-	-	-	-	-	-
2	Serial number		-	-	-	-	-	-	-	-
3	Use (applicable application cycle(s) - NTC 3.2)		-	-	-	-	-	-	-	-
4	Rated power (kW) (NTC 1.3.11)		-	-	-	-	-	-	-	-
5	Rated speed (RPM) (NTC 1.3.12)		-	-	-	-	-	-	-	-
6	Identical engine installed ≥ 1/1/2000 exempted by 13.1.1.2		-	-	-	-	-	-	-	-
7	Identical engine installation date(dd/mm/yyyy) as per 13.1.1.2		-	-	-	-	-	-	-	-
8a	Major Conversion (dd/mm/yyyy)	13.2.1.1 & 13.2.2	-	-	-	-	-	-	-	-
8b		13.2.1.2 & 13.2.3	-	-	-	-	-	-	-	-
8c		13.2.1.3 & 13.2.3	-	-	-	-	-	-	-	-
9a	Tier I	13.3	-	-	-	-	-	-	-	-
9b		13.2.2	-	-	-	-	-	-	-	-
9c		13.2.3.1	-	-	-	-	-	-	-	-
9d		13.2.3.2	-	-	-	-	-	-	-	-
9e		13.7.1.2	-	-	-	-	-	-	-	-
10a	Tier II	13.4	-	-	-	-	-	-	-	-
10b		13.2.2	-	-	-	-	-	-	-	-
10c		13.2.2 (Tier III not possible)	-	-	-	-	-	-	-	-
10d		13.2.3.2	-	-	-	-	-	-	-	-
10e		13.5.2 (Exemptions)	-	-	-	-	-	-	-	-
10f	Tier III (ECA NO _x only)	13.7.1.2	-	-	-	-	-	-	-	-
11a		13.5.1.1	-	-	-	-	-	-	-	-
11b		13.2.2	-	-	-	-	-	-	-	-
11c		13.2.3.2	-	-	-	-	-	-	-	-
11d		13.7.1.2	-	-	-	-	-	-	-	-
12	AM**	installed	-	-	-	-	-	-	-	-
13		not commercially available at this survey	-	-	-	-	-	-	-	-
14		not applicable	-	-	-	-	-	-	-	-

** Refer to the 2014 Guidelines on the approved method process (resolution MEPC 243(66))

2.3 Sulphur oxides (SO_x) and particulate matter (regulation 14)

2.3.1 When the ship operates outside of an Emission Control Area specified in regulation 14.3, the ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0.50% m/m, and/or
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of 0.50% m/m

☒☐

2.3.2 When the ship operates inside an Emission Control Area specified in regulation 14.3, the ship uses:

- .1 fuel oil with a sulphur content as documented by bunker delivery notes that does not exceed the limit value of 0.10% m/m, and/or
- .2 an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6 that is at least as effective in terms of SO_x emission reductions as compared to using a fuel oil with a sulphur content limit value of 0.10% m/m

☒☐

2.3.3 For a ship without an equivalent arrangement approved in accordance with regulation 4.1 as listed in paragraph 2.6, the sulphur content of fuel oil carried for use on board the ship shall not exceed 0.50% m/m as documented by bunker delivery notes

☒

2.4 Volatile organic compounds (VOCs) (regulation 15)

2.4.1 The tanker has a vapour collection system installed and approved in accordance with MSC/Circ.585

☐

2.4.2.1 For a tanker carrying crude oil, there is an approved VOC Management Plan

☐

2.4.2.2 VOC Management Plan approval reference: _____

☐

2.5 Shipboard incineration (regulation 16)

The ship has an incinerator:

2.5.1 installed on or after 1 January 2000 that complies with:

- 2.5.1.1 resolution MEPC.76(40), as amended+
- 2.5.1.2 resolution MEPC.244(66)

☐☐

2.5.2 installed before 1 January 2000 that complies with:

- 2.5.2.1 resolution MEPC.59(33) as amended++
- 2.5.2.2 resolution MEPC.76(40) as amended+

☐☒

+ As amended by resolution MEPC.93(45).

++ As amended by resolution MEPC.92(45).

[illegible]

Issued at Offshore, Gulf Of Thailand on 08 May 2020
(Place of issue) (Date of issue)



Electronically Signed By
Banthad, Chetraphi, Bangkok Port
(Surveyor, American Bureau of Shipping)



Certificate No.: 88141165-3663725-002

INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE

(This Certificate shall be supplemented by a Record of Construction and Equipment)

Issued under the Provisions of the
International Convention for the Prevention of Pollution from Ships, 1973,
as modified by the Protocol of 1978 relating thereto and as amended,
(hereinafter referred to as "the Convention")
under the authority of the Government of

The Commonwealth of the Bahamas
(name of state)

Particulars of Ship
by American Bureau of Shipping

Name of Ship	Distinctive Number or Letters	Port of Registry
PATTANI	732012 C6FJ5	Nassau
Gross Tonnage ¹ a) According to footnote ² b) According to footnote ³	Maximum Deadweight of Ship (metric tons) ⁴	IMO Number
59289	N/A	8615825

Type of Ship¹:~~Oil Tanker~~~~Ship other than an oil tanker with cargo tanks coming under Regulation 2(2) of Annex I of the Convention~~

Ship other than any of the above

THIS IS TO CERTIFY:

1. That the ship has been surveyed in accordance with Regulation 6 of Annex I of the Convention;
2. That the survey shows that the structure, equipment, systems, fittings, arrangement and material of the ship and the condition thereof are in all respects satisfactory and that the ship complies with the applicable requirements of Annex I of the Convention.

This Certificate is valid only when Supplement F issued at Offshore, Gulf of Thailand
on 09 May 2019 is attached.

This certificate is valid until 05 April 2024 ⁵ subject to surveys in accordance with Regulation 6 of Annex I of the Convention.

Completion date of the survey on which this certificate is based: 26 February 2019

Issued at Offshore, Gulf of Thailand on 09 May 2019
(Place of Issue of Certificate) (Date of Issue)



Electronically Signed By
Srisungval, Manop, Bangkok Port
Surveyor, American Bureau of Shipping

¹ Delete as appropriate
² The above gross tonnage has been determined in accordance with the International Convention on Tonnage Measurement of Ships, 1969.
³ The above gross tonnage has been determined by the authorities of the Administration in accordance with the national tonnage rules which were in force prior to the coming into force for existing ships of the International Convention on Tonnage Measurement of Ships, 1969.
⁴ For oil tankers.
⁵ Insert the date of expiry as specified by the Administration in accordance with regulation 10.1 of Annex I of the Convention. The day and the month of date corresponds to the anniversary date as defined in regulation 1.27 of Annex I of the Convention, unless amended in accordance with regulation 10.8 of Annex I of the Convention.

ENDORSEMENT FOR ANNUAL AND INTERMEDIATE SURVEYS

THIS IS TO CERTIFY that, at a survey required by Regulation 6 of Annex I of the Convention, the ship was found to comply with the relevant requirements of the Convention.

Annual Survey:

Signed:

DONGKOT KONGCHEEP

(Surveyor, American Bureau of Shipping)



Place:

OFFSHORE, GULF OF THAILAND

Date:

17 MARCH 2020Annual / ~~Intermediate~~¹ Survey:

Signed:

CHANCHAI C.

(Surveyor, American Bureau of Shipping)



Place:

OFFSHORE, GULF OF THAILAND

Date:

08 FEBRUARY 2021Annual / Intermediate¹ Survey:

Signed:

(Surveyor, American Bureau of Shipping)

Place:

Date:

Annual Survey:

Signed:

(Surveyor, American Bureau of Shipping)

Place:

Date:



¹ Delete as appropriate

ANNUAL / INTERMEDIATE SURVEY IN ACCORDANCE WITH REGULATION 10.8.3

THIS IS TO CERTIFY that, at an annual / intermediate¹ survey in accordance with Regulation 10.8.3 of Annex I of the Convention, the ship was found to comply with the relevant provisions of the Convention.

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____

ENDORSEMENT TO EXTEND THE CERTIFICATE IF VALID FOR LESS THAN 5 YEARS WHERE REGULATION 10.3 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with Regulation 10.3 of Annex I of the Convention, be accepted as valid until _____

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____

ENDORSEMENT WHERE THE RENEWAL SURVEY HAS BEEN COMPLETED AND REGULATION 10.4 APPLIES

The ship complies with the relevant provisions of the Convention, and this Certificate shall, in accordance with Regulation 10.4 of Annex I of the Convention, be accepted as valid until _____

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____

ENDORSEMENT TO EXTEND THE VALIDITY OF THE CERTIFICATE UNTIL REACHING THE PORT OF SURVEY OR FOR A PERIOD OF GRACE WHERE REGULATION 10.5 OR 10.6 ¹ APPLIES

This Certificate shall, in accordance with regulation 10.5 /10.6 ¹ of Annex I of the Convention, be accepted as valid until _____

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____



¹ Delete as appropriate

**ENDORSEMENT FOR ADVANCEMENT OF ANNIVERSARY DATE
WHERE REGULATION 10.8 APPLIES**

In accordance with Regulation 10.8 of Annex I of the Convention, the new anniversary date is _____

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____

In accordance with Regulation 10.8 of Annex I of the Convention, the new anniversary date is _____

Signed: _____
(Surveyor, American Bureau of Shipping)

Place: _____

Date: _____



SUPPLEMENT TO THE INTERNATIONAL OIL POLLUTION PREVENTION CERTIFICATE

(IOPP CERTIFICATE)

RECORD OF CONSTRUCTION AND EQUIPMENT FOR FPSOs AND FSUs

In respect of the provisions of resolution MEPC 139(53). "Guidelines for application of MARPOL Annex I ¹ requirements to FPSOs and FSUs", hereafter referred to as the "Guidelines".

Notes:

1. This form should be used for Floating Production Storage and Offloading facilities (FPSOs) and Floating Storage Units (FSUs) to which Regulation 39 of the revised Annex I of the Convention applies.
2. This Record shall be permanently attached to the IOPP Certificate. The IOPP Certificate shall be available on board the ship at all times.
3. If the language of the original Record is neither English nor French nor Spanish, the text should include a translation into one of these languages.
4. Entries in boxes shall be made by inserting either a cross (x) for the answers "yes" and "applicable" or a dash (-) for the answers "no" and "not applicable" as appropriate.
5. Unless otherwise stated, regulations mentioned in this Record refer to regulations of the revised Annex I of the Convention as implemented under the Guidelines and resolutions refer to those adopted by the International Maritime Organization.

1. Particulars of ship

- | | | |
|--------|---|-------------------------------|
| 1.1 | Name of ship: | PATTANI |
| 1.2 | Distinctive number or letters: | 732012 C6FJ5 |
| 1.3 | IMO number (if applicable): | 8615825 |
| 1.4 | Port of registry (if applicable): | Nassau |
| 1.5 | Gross tonnage (if applicable): | 59289 |
| 1.6 | Produced liquids holding capacity of ship: | 147831.2 (m ³) |
| 1.7 | Maximum Deadweight of ship:
(Regulation 1.23) | N/A (metric tons) |
| 1.8 | Length of ship:
(Regulation 1.19) | 235.737 (m) |
| 1.9 | Operating station (Lat. Long.) | N 009° 39' 49" E 101° 25' 30" |
| 1.10 | Coastal State | Thailand |
| 1.11 | Date of build: | |
| 1.11.1 | Date of building contract: | 01 October 1987 |
| 1.11.2 | Date on which keel was laid or ship was at a similar stage of construction: | 19 October 1987 |
| 1.11.3 | Date of delivery: | 11 April 1988 |
| 1.12 | Conversion to FPSO/FSU (if applicable): | |
| 1.12.1 | Date of conversion contract: | 14 November 2003 |
| 1.12.2 | Date on which conversion was commenced: | N/A |

¹ Annex I of International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, hereafter referred to as the "Convention".

2. Equipment for the control of oil discharge from machinery space bilges and oil fuel tanks (Regulations 14, 15 and 34)

2.1 Carriage of ballast oil fuel tanks:

2.1.1 The ship may, under normal conditions, carry ballast water in oil fuel tanks

☐

2.2 Type of oil filtering equipment fitted:

2.2.1 Oil filtering (15 ppm) equipment (Regulation 14.6)

☐

2.2.2 Oil filtering (15 ppm) equipment with alarm and automatic stopping device (regulation 14.7)

☐

2.3 Approval standards²:

2.3.1 The separating/filtering equipment:

- .1 has been approved in accordance with resolution A.393(X)
- .2 has been approved in accordance with resolution MEPC.60(33)
- .3 has been approved in accordance with resolution MEPC.107(49)
- .4 has been approved in accordance with resolution A.233(VII)
- .5 has been approved in accordance with national standards not based upon resolution A.393(X) or A.233(VII)
- .6 has not been approved.

☐
☐
☐
☐
☐
☐

2.3.2 The process unit has been approved in accordance with resolution A.444(XI)

☐

2.3.3 The oil content meter:

- .1 has been approved in accordance with resolution A.393(X)
- .2 has been approved in accordance with resolution MEPC.60(33)
- .3 has been approved in accordance with resolution MEPC.107(49)

☐
☐
☐

2.4 Maximum throughput of the system is: _____ m³ /h

2.5 Waiver of regulation 14:

2.5.1 The requirements of regulations 14.1 and 14.2 are waived in respect of the ship:

.1 As the ship is provided with adequate means for disposal of oily residues in accordance with the Guidelines

☒

.2 In accordance with regulation 14.5.1 the ship is engaged exclusively in operations within special area(s):

☐

Name of special area(s)

² Refer to Recommendation on international performance and test specifications of oily-water separating equipment and oil content meters adopted by the Organization on 14 November 1977 by resolution A.393(X), which superseded resolution A.233(VII); Further reference is made to the Guidelines and specifications for pollution prevention equipment for machinery space bilges adopted by the Marine Environment Protection Committee of the Organization by resolution MEPC.60(33), which effective on 06 July 1993, superseded resolutions A.393(X) and A.444(XI) (see IMO sales publication IMO-646E); and to the revised Guidelines and specifications for pollution prevention equipment for machinery spaces of ships adopted by the Marine Environment Protection Committee of the Organization by resolution MEPC.107(49) which, effective on 01 January 2005, superseded resolutions MEPC.60(33), A.393(X) and A.444(XI).

bilge water as follows.

Total Volume:		m ³
---------------	--	----------------

holding tank(s)³

3.1 The ship is provided with oil residue (sludge) tanks as follows:

Total Volume:	43.60 m ³
---------------	----------------------

³ Bilge water holding tank(s) are not required by the Convention, entries in the table under paragraph 3.3 are voluntary.

3.2 Means for the disposal of residues in addition to the provisions of sludge tanks:

3.2.1 Incinerator for oil residues (sludge)

3.2.2 Auxiliary boiler suitable for burning oil residues

3.2.3 Facility for adding oil residues to production stream -

3.2.4 Other acceptable means:
Transfer to Slop Tank - Port Side.

X

1

1

☒

3.3 The ship is fitted with holding tank(s) for the retention on board of oily bilge water as follows:

[illegible]

3.4 The ship is required to be constructed according to regulation 12A and complies with the requirements of:

paragraphs 7 or 8 (double side construction)

paragraph 6 and either 7 or 8 (double hull construction)

paragraph 11 (accidental oil fuel outflow performance).

3.5 The ship is not required to comply with the requirements of regulation 12A.

1

☒

4. **Standard discharge connection (Regulation 13)**

4.1 The ship is provided with a pipeline for the discharge of residues from machinery bilges and sludges to reception facilities, fitted with a discharge connection.

☒

5.1 In relation to the application of Regulation 18, the ship is:

☒☒☒

—

☒☐

Total Volume:	16286.40 m ³
---------------	-------------------------

5.3 Dedicated clean ballast tanks (CBT):

5.3.1 The ship is provided with CBT consistent with regulation 18.8,

5.3.2 CBT are distributed as follows:

Total Volume:	m ³
---------------	----------------

5.3.3 The ship has been supplied with a valid Dedicated Clean Ballast Tank

Operation Manual, which is dated:

5.3.4 The ship has common piping and pumping arrangements for ballasting the CBT and handling produced oil

5.3.5 The ship has separate independent piping and pumping arrangements for ballasting the CBT

5.4 Crude oil washing (COW)

5.4.1 The ship is equipped with a COW system

5.4.2 The ship is equipped with a COW system consistent with regulation 33 and 35

5.4.3 The ship has been supplied with a valid Crude Oil Washing Operations and Equipment Manual, which is dated: 24 March 2004

5.5 Limitation of size and arrangements of produced oil tanks (regulation 26):

5.5.1 The ship is constructed according to the provisions of regulation 26

5.6 Subdivision and stability (regulation 28)

5.6.1 The ship is constructed consistent with regulation 28:

5.6.2 Information and data required under regulation 28.5 have been supplied to the ship in an approved form

5.6.3 The ship is constructed consistent with regulation 27.

5.7 Double-hull/side construction

5.7.1 The ship is constructed consistent with regulation 19 as follows:

.1 paragraph 3 (double-hull construction)

.2 paragraph 3.1 and 3.6 (double sides)

.3 paragraph .5 (alternative method approved by the Marine Environment Protection Committee)

5.7.2 The ship is constructed consistent with regulation 19.6 (double bottom requirements)

6. Retention of oil on board (Regulations 29, 31 and 32)

6.1 Oil discharge monitoring and control system:

- 6.1.1 The ship comes under category: - _____ oil tanker as defined in resolution A.496(XII) or ~~A.586(14)~~ ⁴ (delete as appropriate) ☐
- 6.1.2 The oil discharge monitoring and control system has been approved in accordance with resolution MEPC.108(49) ☐
- 6.1.3 The system comprises:
- .1 control unit ☐
 - .2 computing unit ☐
 - .3 calculating unit ☐
- 6.1.4 The system is:
- .1 fitted with a starting interlock ☐
 - .2 fitted with automatic stopping device ☐
- 6.1.5 The oil content meter is approved under the terms of resolution A.393(X) or ~~A.586(14)~~ or ~~MEPC.108(49)~~ ⁵ (delete as appropriate) suitable for crude oil ☐
- 6.1.6 The ship has been supplied with an operations manual for the oil discharge monitoring and control system ☐

6.2 Slop tanks:

- 6.2.1 The ship is provided with: Two (2) _____ dedicated slop tank(s) with the total capacity of: 2768.4 _____ m3, which is: 1.87 _____ % of the oil carrying capacity, in accordance with:
- .1 regulation 29.2.3 ☒
 - .2 regulation 29.2.3.1 ☐
 - .3 regulation 29.2.3.2 ☐
 - .4 regulation 29.2.3.3 ☐
- 6.2.2 Produced oil tanks have been designated as slop tanks ☒

⁴FPSOs and FSUs the keels of which are laid, or which are at similar stage of construction on or after 2 October 1986 should be fitted with a system approved under resolution A.586(14); see IMO sales publication IMO-6464E.

⁵For oil content meters installed on tankers built prior to 2 October 1986, refer to the Recommendation on international performance and test specifications for oily-water separating equipment and oil content meters adopted by the Organization by resolution A.393(X). For oil content meters as part of discharge monitoring and control systems installed on tankers built on or after 2 October 1986, refer to the Guidelines and specifications for oil discharge monitoring and control systems for oil tankers adopted by the Organization by resolution A.586(14); see IMO sales publication IMO-6464E. For oil content meters as part of discharge monitoring and control systems installed on tankers the keel of which are laid or are in a similar stage of construction on or after 1 January 2005, refer to the revised Guidelines and specifications for oil discharge monitoring and control systems for oil tankers adopted by the Organization by resolution MEPC.108(49).

- 6.3 Oil/water interface detectors:
- 6.3.1 The ship is provided with oil/water interface detectors approved under the terms of resolution MEPC.5(XIII) ☒
- 6.4 Waiver of regulation:
- 6.4.1 The requirements of regulations 31 and 32 are waived in respect of the ship as follows:
- .1 The ship is engaged exclusively in operations within special area(s) (Regulation 3.5). ☐
Name of special areas(s):
- .2 The ship is provided with adequate means of disposal of contaminated sea water:
- a. sent ashore ☐
- b. incinerated ☐
- c.. added to the production stream ☒
7. **Pumping, piping and discharge arrangements** (regulation 30)
- 7.1 The overboard discharge outlets for segregated ballast are located:
- 7.1.1 Above the waterline ☐
- 7.1.2 Below the waterline ☒
- 7.2 The overboard discharge outlets, other than the discharge manifold, for clean ballast are located ⁶:
- 7.2.1 Above the waterline ☐
- 7.2.2 Below the waterline ☐
- 7.3 The overboard discharge outlets, other than the discharge manifold, for dirty ballast water or oil-contaminated water from produced oil tank areas are located
- 7.3.1 Above the waterline ☐
- 7.3.2 Below the waterline in conjunction with the part flow arrangements in compliance with regulation 30.6.5 ☐
- 7.3.3 Below the waterline ☒
- 7.4 Discharge of oil from produced oil pumps and oil lines (regulations 30.4 and 30.5):
- 7.4.1 Means to drain all produced oil pumps and oil lines at the completion of produced oil discharge:
- .1 drainings capable of being discharged to a produced oil tank or slop tank ☒
- .2 for discharge a special small-diameter line is provided ☒

⁶ Only those outlets which can be monitored are to be indicated.

8. **Shipboard oil pollution emergency plan** (regulation 37)

- 8.1 The ship is provided with a shipboard oil pollution emergency plan in compliance with regulation 37.1 ☒
- 8.2 The ship is provided with an oil pollution emergency plan approved in accordance with procedures established by _____
as the Coastal State in compliance with the unified interpretation of regulation 37.1 ☐
- 8.3 The ship is provided with a contingency plan in accordance with requirements of OPRC Art 3(2) accepted in accordance with regulation 37. ☐

9. **Surveys**

- 9.1 Records of surveys in accordance with A.744(18), as amended maintained onboard. ☐
- 9.2 In-water surveys in lieu of dry-docking authorized as per documentation
As per authorized/instruction by ABS EH Survey, Hemisphere Offshore Lead Surveyor dated 14 & 18-Feb-2019 and Flag Administration e-mail dated 18-Feb-2019. ☒

10. **Equivalents**

- 10.1 Equivalents have been approved by the Administration for certain requirements of the guidelines on those items listed under paragraph(s)
1) All E/R bilge water and sludge to be transferred to Slop Tank - Port and 5 P holding tank for produced water and then subsequently pumped to the re-injection system back to the platform for disposal. 2) All tank cleaning water/produced water is added to the production stream. ☒

THIS IS TO CERTIFY that this Record is correct in all respects.

Issued at _____ Offshore, Gulf of Thailand
(Place of issue of the Record)

09 May 2019
Date of Issue



Electronically Signed By
Srisungval, Manop, Bangkok Port
(Surveyor, American Bureau of Shipping)





NO# 1167809

PLATONG PM

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1	04-Oct-18	PASSS jobcard modification	0920/18	Krittin S.

JOB CARD NUMBER: 1Y PRODUCE WATER DEGASSER PACKAGE PM**SKID/EQUIPMENT:** PL-PK7235-PLCPP2 PUMP,PRODUCE WATER DEGASSER PACKAGE**OPT. SEQUENCE:** 10 1Y PRODUCE WATER DEGASSER PACKAGE PM - IE**WORK CENTER:** PLIE

CREW SIZE	DURATION	EST.MAN-HRS	RESOURCE DESCRIPTIONS
2	6	12	INSTRUMENT&ELECTRIAL TECH., PLATONG

EQUIPMENT CRITICALITY:	REQUIRED OPERATIONAL STATUS:
ECA: 2 IC: N/A	PLANT: N/A EQUIPMENT: N/A

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- 1) RELIABILITY CENTERED MAINTENANCE, RCM 2009
- 2) EQUIPMENT CRITICALITY ASSESSMENT, ECA 2009

EQUIPMENT UNDER THIS TASK:

- 1) PL-PK7235-PLCPP2 : PACKAGE,PRODUCED WATER DEGASSER
- PL-V7235-PLCPP2 : VESSEL,PRODUCED WATER DEGASSING DRUM
- PL-P7265-PLCPP2 : PUMP,JETTING WATER

SPARE PART LIST:

ITEM NO	DESCRIPTION	QUALITY	UNIT
NA			

JOB INSTRUCTIONS**ELECTRIAL TASKS:**COMPLETED
(YES) (NO)**1) CONDITION MONITORING:**

- 1.1 REVIEW VIBRATION SURVEY TRENDING RECORD ON PUMP MOTOR FOR BEARING CONDITIONS.

X () () REMARKS _____

2) PREVENTIVE MAINTENANCE TASKS:

- 2.1 COORDINATE WITH PRODUCTION TO PERFORM ALARMS AND SHUTDOWN TASK.
- 2.2 ISOLATE ELECTRICAL POWER TO MOTOR.
- 2.3 INSPECT ELECTRICAL AND INSTRUMENT SYSTEMS FOR LEAKS OR LOOSE CONNECTIONS.

X () () REMARKS _____

X () () REMARKS _____

X () () REMARKS _____

3) VISUAL INSPECTION:



3.1 REVIEW INSPECT ELECTRICAL AND INSTRUMENT SYSTEMS
FOR LEAKS OR LOOSE CONNECTIONS.

☒ () REMARKS _____

4) PUMP MOTOR AND HEATERS:

PUMP MOTORS (PM-7265):

4.4.1 GREASE MOTOR BEARINGS IF GREASE FITTING PROVIDED.

☒ () REMARKS _____

4.4.2 PERFORM CHECK MOTOR INSULATION RESISTANCE:

IR = 17.6 G Ω , > 1.5 M Ω .

☒ () REMARKS _____

4.4.3 PERFORM CHECK MOTOR WINDING IMPEDANCE AND RECORD RESULT:

(U-V)= 0.1 Ω , (V-W)= 0.1 Ω , (W-U)= 0.1 Ω

☒ () REMARKS _____

4.4.4 PERFORM CHECK MOTOR SPACE HEATER AND RECORD RESULT:

HTR RESISTANCE = 105.1 Ω / CURRENT= 0.8 A

☒ () REMARKS _____

4.4.5 PERFORM INSPECT AND CLEAN UP CONTACT OF

MAGNETIC CONTACTOR

☒ () REMARKS _____

4.4.6 CO-ORDINATE WITH PROD/MECH TO DE-ISOLATE POWER AND

TEST RUN, CHECK THE MOTOR CURRENT AND RECORD.

I1= A, I2= A, I3= A

☐ () REMARKS Can't run due to
Process S/D -

PUMP MOTORS (PM-7295): Refer WO#1164533

— 4.4.1 GREASE MOTOR BEARINGS IF GREASE FITTING PROVIDED.

() () REMARKS _____

— 4.4.2 PERFORM CHECK MOTOR INSULATION RESISTANCE:

— IR = _____ Ω , > 1.5 M Ω .

() () REMARKS _____

— 4.4.3 PERFORM CHECK MOTOR WINDING IMPEDANCE AND RECORD RESULT:

— (U-V)= _____ Ω , (V-W)= _____ Ω , (W-U)= _____ Ω

() () REMARKS _____

— 4.4.4 PERFORM CHECK MOTOR SPACE HEATER AND RECORD RESULT:

— HTR RESISTANCE = _____ Ω / CURRENT= _____ A

() () REMARKS _____

— 4.4.5 PERFORM INSPECT AND CLEAN UP CONTACT OF

MAGNETIC CONTACTOR

() () REMARKS _____

— 4.4.6 CO-ORDINATE WITH PROD/MECH TO DE-ISOLATE POWER AND

TEST RUN, CHECK THE MOTOR CURRENT AND RECORD.

— I1= _____ A, I2= _____ A, I3= _____ A

() () REMARKS _____

PUMP MOTORS (PM-7300): Refer WO#1167018

— 4.4.1 GREASE MOTOR BEARINGS IF GREASE FITTING PROVIDED.

() () REMARKS _____

— 4.4.2 PERFORM CHECK MOTOR INSULATION RESISTANCE:

— IR = _____ Ω , > 1.5 M Ω .

() () REMARKS _____

— 4.4.3 PERFORM CHECK MOTOR WINDING IMPEDANCE AND RECORD RESULT:

— (U-V)= _____ Ω , (V-W)= _____ Ω , (W-U)= _____ Ω

() () REMARKS _____



4.4.4 PERFORM CHECK MOTOR SPACE HEATER AND RECORD RESULT:

HTR RESISTANCE = _____ Ω / CURRENT = _____ A () () REMARKS _____

4.4.5 PERFORM INSPECT AND CLEAN UP CONTACT OF

MAGNETIC CONTACTOR () () REMARKS _____

4.4.6 CO-ORDINATE WITH PROD/MECH TO DE-ISOLATE POWER AND

TEST RUN, CHECK THE MOTOR CURRENT AND RECORD.

I1 = _____ A, I2 = _____ A, I3 = _____ A () () REMARKS _____

PUMP MOTORS (PM-7305): Refer WO#1166907

4.4.1 GREASE MOTOR BEARINGS IF GREASE FITTING PROVIDED. () () REMARKS _____

4.4.2 PERFORM CHECK MOTOR INSULATION RESISTANCE:

IR = _____ Ω , > 1.5 M Ω . () () REMARKS _____

4.4.3 PERFORM CHECK MOTOR WINDING IMPEDANCE AND RECORD RESULT:

(U-V) = _____ Ω , (V-W) = _____ Ω , (W-U) = _____ Ω () () REMARKS _____

4.4.4 PERFORM CHECK MOTOR SPACE HEATER AND RECORD RESULT:

HTR RESISTANCE = _____ Ω / CURRENT = _____ A () () REMARKS _____

4.4.5 PERFORM INSPECT AND CLEAN UP CONTACT OF

MAGNETIC CONTACTOR () () REMARKS _____

4.4.6 CO-ORDINATE WITH PROD/MECH TO DE-ISOLATE POWER AND

TEST RUN, CHECK THE MOTOR CURRENT AND RECORD.

I1 = _____ A, I2 = _____ A, I3 = _____ A () () REMARKS _____

5) FINAL CHECK:

5.1 RESTORE ELECTRICAL POWER, TEST RUN AND CHECK FOR PROPER

OPERATION AND RETURN UNIT TO NORMAL OPERATION. () () REMARKS _____

COMPLETED BY: JIRAYUTH B. / SUPAKORN B. DATE: 23 JAN 2022

COMMENT: _____

SUPERVISOR : [Signature], DATE : 25 Jan 2022





Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1	4 Oct 18	PASSS 4 Job task review	0920/18	Krittin S.
2	31 Jul 19	Revise jobcard	0661/19	Boonchan S.

JOB CARD NUMBER: 1Y PRODUCED WATER DEGASSER (PK-7235) PM
SKID/EQUIPMENT: PL-PK7235-PLCPP2 PACKAGE, PRODUCED WATER DEGASSER
OPT. SEQUENCE: 10 1Y PRODUCED WATER DEGASSER (PK-7235) PM - MECH
WORK CENTER: PLMECH

CREW SIZE	DURATION	EST.MAN-HRS	RESOURCE DESCRIPTIONS
2	6	12	MECHANIC TECH, PLATONG

EQUIPMENT CRITICALITY:	REQUIRED OPERATIONAL STATUS:
ECA: 2 IC: N/A	PLANT: N/A EQUIPMENT: N/A

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- RELIABILITY CENTERED MAINTENANCE, RCM 2009
- EQUIPMENT CRITICALITY ASSESSMENT, ECA 2009
- P&ID PG2-CPP2-PRO-PID-JRM-000-00207-00
- P&ID PG2-CPP2-PRO-PID-JRM-000-00208-00

EQUIPMENT UNDER THIS PM TASK:

PL-P3665-PLCPP PUMP; LIQUID SKIM TANK #2
• PL-PK7235-PLCPP2 : PACKAGE, PRODUCED WATER DEGASSER
• PL-P7265-PLCPP2 : PUMP, JETTING WATER
MFGR: SULZER PUMPS (1.5x4x16-1), MODEL NO. : OHH

SPARE PARTS AND TOOL REQUIREMENT:

STOCK	DESCRIPTION	PART NUMBER	QTY	UOM
N/A				

JOB INSTRUCTIONS**MECHANICAL TASKS:**

	COMPLETED (YES) (NO)
1) OBTAIN WORK PERMIT, REVIEW HA/JSA AND CARRY OUT TOOLBOX MEETING.	(/)() REMARKS _____
2) COORDINATE WITH PRODUCTION TO MAKE EQUIPMENT AVAILABLE FOR INSPECTION.	(/)() REMARKS _____
3) VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTINGS AND NON STANDARD CONDITIONS.	(/)() REMARKS _____
4) CHECK PUMP FREEDOM OF ROTATION.	(/)() REMARKS _____
5) REPLACE BEARING LUBE OIL AND OILER BOTTLE (CX GST EP 46).	(/)() REMARKS _____
6) INSPECT COUPLING CLEARANCE, ANY DAMAGED AND TIGHTEN.	(/)() REMARKS _____
7) CHECK MECHANICAL SEAL CONDITION FOR SIGN OF LEAK AND.	(/)() REMARKS _____



- 8) CHECK PUMP BEARING CONDICTION. (X) () REMARKS: _____
- 9) INSPECT & CLEAN PUMP SUCTION STRAINER. (X) () REMARKS: Cleaned up strainer
- 10) PERFORM PUMP SHAFT ALIGNMENT CHECK. (X) () REMARKS: Re-adjusted.
- 11) CLEAN UP HYDROCYCLONE FLUSHING LINE OF MECH SEAL. (X) () REMARKS: _____
- 12) ORIFICE REMOVE AND VISUAL CHECK OF INNER HOLE FLOW CUT OR CORROSION NOT OVER THAN ORIFICE SIZE DESIGN. REPLACE IF NECESSARY. (X) () REMARKS: _____
- 13) HYDROCYCLONE REMOVE AND VISUAL CHECK OF INTERNAL CORROSION, INLET/OUTLET HOLE FLOW CUT, REPLACE IF NECESSARY. (X) () REMARKS: _____
- 14) CHECK AND RECORD SUCTION & DISCHARGE PRESSURE.
SUCTION PRESSURE _____ PSIG.
DISCHARGE PRESSURE _____ PSIG. (X) () REMARKS: Do not test run pump due to no liquid in process.
- 15) RETURN PUMP BACK TO NORMAL OPERATION. (X) () REMARKS: _____
- 16) HOUSE KEEPING WORKING AREA & CLOSE WORK PERMIT. (X) () REMARKS: _____

=====

COMPLETED BY: Wasanthorn B. / Anomthep K. DATE: 23-Jan-2023
Elgapon I.

COMMENT: _____

Mech specialist;
SUPERVISOR : [Signature] DATE : 23-Jan-2022



1155692

PLATONG – PM (CTQ)

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1	30-Dec-14	Update PM job card	0852/14	Pongpol P.
2	11-May-20	REVISE JOB CARD CTQ	0460/20	Chaowit R.
3	22-Jul-20	Revise jobcard	0598/20	Taweesak T.

JOB CARD NUMBER: 8K SOLAR SATURN GENERATOR NO.1 PM
SKID/EQUIPMENT: PL-SKG3970-PLCPP; SKID; GEN SOLAR SATURN #1-PLCPP
OPT. SEQUENCE: 20 8K SOLAR SATURN GENERATOR NO.1 PM – I/E
WORK CENTER: PLIE
CREW SIZE 4 **EST.MAN-HRS** 30 **MAN POWER CRAFT AND COMPETENCIES**
INSTUMENT & ELECTRICAL, PLATONG CPP

EQUIPMENT CRITICALITY: **REQUIRED OPERATIONAL STATUS:**
ECA: 2 IC: N/A PLANT: N/A EQUIPMENT: SHUTDOWN

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS PM TASK:

PL-SKG3970-PLCPP SKID; GEN SOL SATURN #1-PLCPP

1. TURBINE DRIVE GENERATOR SET
2. GENERATOR SET
3. SKID OIL COOLER FAN
4. SKID ENCLOSURE VENT FAN

SPARE PART LIST:

ITEM NO.	DESCRIPTION	P/N	QTY	UNIT
NA				

JOB INSTRUCTIONS

INSTRUMENT TASKS:

COMPLETED
(YES) (NO)

- 1) **COORDINATE WITH OPERATIONS TO MAKE EQUIPMENT AVAILABLE FOR SERVICE DEACTIVATE UNIT FIRE PROTECTION SYSTEM.**

() () REMARE: _____

- 2) **VISUALLY INSPECT ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR DAMAGE FAULTS, LEAKS, LOOSE OR BROKEN CONNECTIONS.**

NOTE AND RECIFY AS NECESARY WHEN UNIT IS SHUTDOWN.

() () REMARE: _____

- 3) **COORDINATE WITH OPERATIONS TO SHUTDOWN ENGINE ON ONE OF THE FOLLOWING SAFETY DEVICES (SIMULATION):**

- A) HIGH TEMPERATURE (T5 1255 DEG.F, 20 SEC) () () REMARE: _____
B) HIGH TEMPERATURE (T7 860 DEG.F) () () REMARE: _____
C) OVERSPEED (G383 106%/109% NGP/NGP BACKUP) () () REMARE: _____



- D) LOW LUBE OIL PRESSURE (TP380 25 PSIG) () (✓) REMARE: _____
E) ENGINE HIGH VIBRATION (TV384 0.65-IN/SEC.) () (✓) REMARE: _____
F) GEARBOX HIGH VIBRATION (TV385 40-G.) () (✓) REMARE: _____
G) EMERGENCY STOP () (✓) REMARE: _____

RECORD SAFETY DEVICES USED IN THE EQUIPMENT HISTORY FILE.

**4) CHECK THE OPERATION AND SETPOINT OF THE FOLLOWING
PRESSURE SWITCHES:**

- A) S342-2 EXHAUST VENT PRESSURE CHECK HIGH S/D. (✓) () REMARE: _____
B) S349 FLAME OUT PROTECTION DELTA-P HIGH S/D. (✓) () REMARE: _____
C) S324-1 LUBE OIL TANK PRESSURE HIGH ALARM. (✓) () REMARE: _____
D) S343 LIQUID FUEL OUTLET PRESSURE HIGH S/D. (✓) () REMARE: _____
E) S398-30 CO2 DISCHARGE PRESSURE. (✓) () REMARE: _____
F) S347-1 LIQUID FUEL RETURN LINE PRESSURE CHECK HIGH. (✓) () REMARE: _____

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

**5) CHECK THE OPERATION AND SETPOINT OF THE FOLLOWING
LEVEL SWITCHES:**

- A) S388-2 LUBE OIL TANK LEVEL LOW SHUTDOWN. (✓) () REMARE: _____
B) S389 LIQUID FUEL PURGE TANK HIGH LEVEL. (✓) () REMARE: _____

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

**6) CHECK THE OPERATION AND SETPOINT OF THE FOLLOWING
PRESSURE TRANSMITTER**

- A) TP380 LUBE OIL HEADER PRESS. (✓) () REMARE: _____
B) TP386 GAS FUEL PRESSURE. (✓) () REMARE: _____
C) TP341 AIR ASSIST SUPPLY PRESSURE (✓) () REMARE: _____
D) TP344 LIQUID FUEL PUMP PRESSURE. (✓) () REMARE: _____
E) TPD397 LUBE OIL FILTER DP HIGH (✓) () REMARE: _____
F) TPD799 AIR INLET DIFF PRESSURE. (✓) () REMARE: _____
G) TPD344 GAS FUEL CONTROL DELTA-P PRESSURE (✓) () REMARE: _____
H) TP387 LIQUID FUEL PRESSURE. (✓) () REMARE: _____
I) TP342-1 GAS FUEL VALVE CHECK. (✓) () REMARE: _____
J) TP349 MONITOR PCD. (✓) () REMARE: _____

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

7) CHECK THE OPERATION AND SETPOINT OF THE FOLLOWING RTD'S:

- A) RT396 ENCLOSURE TEMP. (✓) () REMARE: _____
B) RT327-1 BEARING #1 DRAIN TEMP. (✓) () REMARE: _____
C) RT327-2 BEARING #2/3 DRAIN TEMP. (✓) () REMARE: _____
D) RT327-4 REDUCTION GEAR BEARING DRAIN TEMP. (✓) () REMARE: _____
E) RT339 TURBINE AIR INLET TEMP. (✓) () REMARE: _____
F) RT380 LUBE OIL HEADER TEMP. (✓) () REMARE: _____
G) RT370A WIRING GEN PHASE A TEMP. (✓) () REMARE: _____
H) RT370B WIRING GEN PHASE B TEMP. (✓) () REMARE: _____
I) RT370C WIRING GEN PHASE C TEMP. (✓) () REMARE: _____

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

**8) CHECK THE OPERATION AND SETPOINT OF THE FOLLOWING:
THERMOCOUPLES:**

- A) TC382 T5 (✓) () REMARE: _____
B) TC382-1 T7 (✓) () REMARE: _____

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

**9) CHECK THE OPERATION OF THE SPEED SENSING EQUIPMENT
AND INSPECT MAGNETIC PICK-UP FOR DAMAGE, CHECK LOOP
RESISTANCE, VOLTAGE, SPEED SETTING AND ASSOCIATED
METER READING.**

- A) G383 SENSOR SPEED NGP
B) G383-1 BACKUP SPEED NGP

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

10) CHECK THE OPERATION OF THE VIBRATION SENSING EQUIPMENT AND INSPECT FOR DAMAGE, CHECK LOOP RESISTANCE, VOLTAGE, SETTING AND ASSOCIATED METER READING.

- A) TV384-1 ENGINE HIGH VIBRATION.
B) TV385-1 GEAR BOX HIGH VIBRATION.

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

(✓)() REMARE: function test
(✓)() REMARE: function test

11) CHECK THE OPERATION AND INSPECTION OF THE FOLLOWING SOLENOID VALVE.

- A) L330-1 SOLENOID; PNEUMATIC START PILOT VALVE
B) L390-1 SOLENOID; ON CRANK CLEANING SHUTOFF VALVE
C) L340-1 SOLENOID; GAS TORCH SHUTOFF VALVE
D) L341-1 SOLENOID; PRIMARY GAS FUEL SHUTOFF VALVE
E) L341-3 SOLENOID; GAS FUEL VENT VALVE
F) L342-1 SOLENOID; SECONDARY GAS FUEL SHUTOFF VALVE
G) L345-1 SOLENOID; LIQUID FUEL PURGE VALVE
H) L347-1 SOLENOID; LIQUID FUEL BYPASS.
I) L348-1 SOLENOID; LIQUID FUEL TORCH
J) L348-2 SOLENOID; LIQUID TORCH AIR ASSIST SHUTOFF.
K) L349-2 SOLENOID; LIQUID FUEL SHUTOFF VALVE
L) L349-2 SOLENOID; FUEL SHUTOFF SECONDARY LIQUID.
M) L350-1 SOLENOID; AIR ASSIST SHUTOFF
N) L598-20A PRIMARY REREASE # 1
O) L598-20B PRIMARY REREASE # 2
P) L598-21 EXTENDED REREASE # 1

REMARKS: FOLLOW INSTRUMENT CHECK LIST.

(✓)() REMARE: 60.2
(✓)() REMARE: 48.62
(✓)() REMARE: 100.32
(✓)() REMARE: 101.12
(✓)() REMARE: 101.32
(✓)() REMARE: 98.02
(✓)() REMARE: 46.22
(✓)() REMARE: 12.32
(✓)() REMARE: 101.12
(✓)() REMARE: 103.02
(✓)() REMARE: 12.32
(✓)() REMARE: 91.72
(✓)() REMARE: 71.12
(✓)() REMARE: 12.32
(✓)() REMARE: 13.32
(✓)() REMARE: 13.32

12) CARRY OUT PRE-START INSPECTION.

(✓)() REMARE: _____

13) COORDINATE WITH OPERATIONS TO START ENGINE.

(✓)() REMARE: _____

14) VISUALLY INSPECT ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR DAMAGE FAULTS, LEAKS, LOOSE OR BROKEN CONNECTIONS.

(✓)() REMARE: _____

15) RETURN UNIT FIRE PROTECTION SYSTEM TO NORMAL POSITION.

(✓)() REMARE: _____

ELECTICAL TASKS:

**COMPLETED
(YES) (NO)**

1) DEACTIVATE UNIT FIRE PROTECTION SYSTEM.

(✓)() REMARE: _____

2) VISUALLY INSPECT ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY, EXCESSIVE MOTOR VIBRATION AND NON STANDARD CONDITIONS.

(✓)() REMARE: _____

3) COORDINATE WITH OPERATIONS TO SHUTDOWN ENGINE.

(✓)() REMARE: _____

4) INHIBIT SWITCH AND REMOVE CO2 DISCHARGE SOLENOID

(✓)() REMARE: _____

4) TEST AND RECORD INSULATION RESISTANCE OF GENERATOR ROTOR AND STATOR.

(✓)() REMARE: _____

REMARKS: FOLLOW ELECTRICAL CHECK LIST.

**5) TEST AND RECORD INSULATION RESISTANCE OF EXCITER ROTOR AND STATOR.****REMARKS: FOLLOW ELECTRICAL CHECK LIST.**

() () REMARE: _____

6) CHECK AND RECORD DATA MOTOR.

- A) E-3970-1 AC MAIN LIQUID FUEL PUMP.
- B) E-3970-2 ENCLOSURE VENT FAN.
- C) E-3970-3 LUBE OIL COOLER FAN.
- D) DC BACK UP PRE/POST LUBE OIL PUMP.

REMARKS: FOLLOW ELECTRICAL CHECK LIST.

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____

7) INSPECT IGNITER PLUG ASSEMBLY AND CARRY OUT THE FOLLOWING:

- A) CHECK FOR INSULATION DAMAGE AND ELECTRODE WEAR.
- B) CHECK IGNITER CABLE AND VERIFY GROUND.

() () REMARE: _____
() () REMARE: _____

POWER GENERATOR**8) ISOLATE POWER AND CARRY OUT THE FOLLOWING:**

- A) INSPECT AND CLEAN COOLING PASSAGES, FAN AND LOVERS.
- B) INSPECT AND CLEAN RECTIFIERS.
- C) INSPECT AND CLEAN SURGE PROTECTORS.
- D) CHECK CABLE AND TERMINATIONS, VERIFY GROUND.
- E) CHECK THE OPERATION OF SPACE HEATERS.

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____

GENERATOR CONTROL PANEL**9) ISOLATE AND CARRY OUT THE FOLLOWING:**

- A) INSPECT AND CLEAN GENERATOR ANCILLARY EQUIPMENT.
- B) CHECK CABLE AND TERMINATIONS, VERIFY GROUND.
- C) CHECK OPERATION OF PANEL INDICATOR LAMPS.
- D) CHECK SWITCHES FOR DEFECTS AND DAMAGE.
- E) CHECK RELAYS AND CONTROL PAGES FOR DEFECT, DAMAGE AND OVER HEATING.

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____

BATTERY BANK AND BATTERY CHARGER**10) INSPECT BATTERY SYSTEM AND CARRY OUT THE FOLLOWING:**

- A) EXTERNALLY CLEAN BATTERY CASE.
- B) CHECK DAMAGED OR CRACKED CASE, FAULTY SEALING OR MISSING VENT PLUG.
- C) INSPECT TERMINALS, CLEAN AND APPLY MULTIPURPOSE GREASE.
- D) CHECK AND RECORD DATA BATTERY BANK AND BATTERY CHARGER.

REMARKS: FOLLOW ELECTRICAL CHECK LIST.

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____

11) INSPECT UV/IR FLAME DETECTOR(MODEL X5200) AND CARRY OUT THE FOLLOWING:

- A) CHECK LED INDICATOR (GREEN : POWER ON/NORMAL AUTO Oi)
- B) CLEAN WINDOWS AND Oi PLATE
(USE DET-TRONICS WINDOW CLEANER)
- C) CALIBRATE Oi. (USE INSPECTOR MONITOR PROGRAM)
- D) FUNCTION TEST UV/IR (USE UV/IR TEST LAMP)
- E) CHECK CO2 DISCHARGE SOLENOID (ENERGIZE)
- F) RESET CO2 DISCHARGE SOLENOID (USE SCREWDRIVER)

REMARKS: FOLLOW ELECTRICAL CHECK LIST.

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____
() () REMARE: _____

12) INSPECT GAS DETECTOR(MODEL PIRECL) AND CARRY OUT THE FOLLOWING:

- A) CHECK LED INDICATOR (GREEN : NORMAL OPERATION)
- B) CLEAN MIRROR AND WINDOW
(USE DET-TRONICS WINDOW CLEANER)
- C) CLEAN WEATHER BAFFLE (USE DRY AIR)

() () REMARE: _____
() () REMARE: _____
() () REMARE: _____



- D) FUNCTION TEST GAS DETECTOR
(USE CALIBRATION GAS METHANE 50% LEL)
REMARKS: FOLLOW ELECTRICAL CHECK LIST.

(X) REMARE: _____

13) INSPECT THERMAL DETECTOR AND CARRY OUT THE FOLLOWING:

- A) CLEAN EQUIPMENT.
B) CHECK WIRING TERMINAL AND VERIFY GROUND.
C) FUNCTION TEST THERMAL DETECTOR (USE THERMO UNIT)
REMARKS: FOLLOW ELECTRICAL CHECK LIST.

(X) REMARE: _____

(X) REMARE: _____

(X) REMARE: _____

14) INSPECT CO2 SYSTEM/CO2 DISCHARGE SOLENOID AND CARRY OUT THE FOLLOWING:

- A) INSPECT PIPING FOR CORROSION AND DAMAGE.
B) CHECK NOZZLES NOT PLUGGED AND ARE AIMED AT PROTECTED EQUIPMENT.
C) FUNCTION TEST CO2 DISCHARGE SOLENOID
(AUTO AND MANUAL SOLENOID ENERGIZE)

(X) REMARE: _____

(X) REMARE: _____

(X) REMARE: _____

15) FIRE DAMPER

- A) VISUALLY INSPECT FIRE DAMPERS FOR DAMAGE AND FUNCTION TEST DAMPER PNEUMATIC TRIP MECHANISM. RESULT NORMAL

(X) REMARKS: _____

14) CARRY OUT PRE-START INSPECTION.

(X) REMARE: _____

15) COORDINATE WITH OPERATIONS TO START ENGINE.

(X) REMARE: _____

16) VISUALLY INSPECT ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY, EXCESSIVE MOTOR VIBRATION AND NON STANDARD CONDITIONS.


(X) REMARE: _____

17) RETURN UNIT FIRE PROTECTION SYSTEM TO NORMAL POSITION.

(X) REMARE: _____

COMPLETED BY: Sayan T. / Shayath B. / Teeben S. / Nantarat J. DATE: 18-19 AUG 2021

COMMENT:

Wutipong C. 
SUPERVISOR: 21 AUG 2021, DATE: _____

W/E Specialist

Electrical Checklist

CELL NO.	VOLTS DC	MODEL	REMARK
1	2.30	Power Safe 4V230	<div style="border-left: 2px solid blue; height: 100%; position: relative; padding-left: 5px;"> ↑ ↓ </div>
2	2.25	Power Safe 4V230	
3	2.25	Power Safe 4V230	
4	2.25	Power Safe 4V230	
5	2.24	Power Safe 4V230	
6	2.24	Power Safe 4V230	
7	2.25	Power Safe 4V230	
8	2.25	Power Safe 4V230	
9	2.25	Power Safe 4V230	
10	2.25	Power Safe 4V230	
11	2.25	Power Safe 4V230	
12	2.24	Power Safe 4V230	
TOTAL	27.08		

FLOAT CHARGE	<u>27.08</u>	VDC	/	<u>8</u>	ADC.
HIGH RATE CHARGE	<u>27.08</u>	VDC	/	<u>8</u>	ADC.
ENGINE STARTS	<u>52</u>				
RUNNING HOURS	<u>40713</u>	HRS	/		
SPACE HEATER	<u>34.2</u>	OHM	/	<u>3.2</u>	A.

INSULATION RESISTANCE TEST BY TERAOHM (500 V)

GENERATOR STATOR

INSULATION RESISTANCE

2.53 Mohm

WINDING RESISTANCE

L1-L2	=	<u>5.1 m</u> ohm
L2-L3	=	<u>5.1 m</u> ohm
L3-L1	=	<u>5.0 m</u> ohm

R01 = 2.62 MΩ
 R05 = 2.56 MΩ
 R10 = 2.61 MΩ
 DAR = 0.97
 PI = 1.02
 DD = 10.9

GENERATOR EXCITER STATOR

INSULATION RESISTANCE

3.98 Mohm

WINDING RESISTANCE

10.09 ohm

**GENERATOR ROTOR**

INSULATION RESISTANCE

7.42 Mohm

WINDING RESISTANCE

2.78 ohm**GENERATOR EXCITER ROTOR**

INSULATION RESISTANCE

25.6 Mohm

WINDING RESISTANCE

0.28 ohm

IE SPECIALIST : WUTTIKONG C DATE : 19 Aug 2011 (Required IE Specialist to sign off at site)

AC MAIN LIQUID FUEL PUMP E-3970-1.

MOTOR INSULATION RESISTANCE

= 40.7 Mohm

MOTOR WINDING RESISTANCE

L1-L2 = 5.5 ohmL2-L3 = 5.5 ohmL3-L1 = 5.5 ohm

MOTOR CURRENT

L1 = 2.2 A.L2 = 2.4 A.L3 = 2.3 A.**ENCLOSURE VENT FAN E-3970-2.**

MOTOR INSULATION RESISTANCE

= 2.07 Mohm

MOTOR WINDING RESISTANCE

L1-L2 = 5.5 ohmL2-L3 = 5.5 ohmL3-L1 = 5.5 ohm

MOTOR CURRENT

L1 = 2.6 A.L2 = 2.8 A.L3 = 2.9 A.**LUBE OIL COOLER FAN E-3970-3.**

MOTOR INSULATION RESISTANCE

= 177 Mohm

MOTOR WINDING RESISTANCE

L1-L2 = 2.72 ohm



L2-L3 = 2.72 ohm
L3-L1 = 2.72 ohm
MOTOR CURRENT
L1 = 5.5 A.
L2 = 5.3 A.
L3 = 5.4 A.

DC BACK UP PRE/POST LUBE OIL PUMP.

MOTOR VOLTAGE 27.08 VDC.
MOTOR CURRENT 12 ADC.
DISCHARGE PRESSURE 8.9 PSI.

TAG NO.	TEST	MODEL	REMARK
Z398-60 UV/IR FLAME DETECTOR	PASS	DET-TRONICS X5200A	
Z398-61 UV/IR FLAME DETECTOR	PASS	DET-TRONICS X5200A	
Z398-62 UV/IR FLAME DETECTOR	PASS	DET-TRONICS X5200A	
ZX399-100 GAS DETECTOR	PASS	DET-TRONICS PIRECLA4A1W1	ALARM LOW 10% LEL ALARM HIGH 25% LEL
ZX399-103 GAS DETECTOR	PASS	DET-TRONICS PIRECLA4A1W1	ALARM LOW 10% LEL ALARM HIGH 25% LEL
S398-31A THERMAL FIRE DETECTOR	PASS	FENWAL DETECT-A-FIRE	SET 325°F



S398-31B THERMAL FIRE DETECTOR	PASS	FENWAL DETECT-A-FIRE	SET 325°F
CO ₂ CYLINDER#1	PASS		HEAD SOLENOID
CO ₂ CYLINDER#2	PASS		HEAD SOLENOID
CO ₂ CYLINDER#3	PASS		HEAD SOLENOID
CO ₂ CYLINDER#4	PASS		

COMPLETED BY: Jayant T. / Jayanth B. / Teera S. / Montamat T. DATE: 18-19 AUG 21

COMMENT: Replaced Gas detector 2X399-103 with
spare in shop.

Wuttipong C.

SUPERVISOR: 21 AUG 2021 DATE: _____

I/E Specialist 



W10:1155692.

PLATONG-PM(CTQ)

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1		Upload Job Card into Sharepoint		
2	30-Oct-18	Revise Jobcard and BOM	0984/18	Taweesak T.
3	13 May 2020	Revise Jobcard CTQ	0465/20	Arun C.

JOB CARD NUMBER: 8K SOLAR SATURN GENERATOR NO.1 PM

SKID/EQUIPMENT: PL-SKG3970-PLCPP; SKID; GEN SOL SATURN #1-PLCPP
 PL-SKG3972-PLCPP; SKID; GEN SOL SATURN #2-PLCPP
 PL-SKG3975-PLCPP; SKID; GEN SOL SATURN #3-PLCPP

OPT. SEQUENCE: 10 8K SOLAR SATURN GENERATOR NO.1 PM – MECH

WORK CENTER: PLMECH

CREW SIZE	DURATION	EST.MAN-HRS	MAN POWER CRAFT AND COMPETENCIES
3	12	36	MECHANICAL TECH, PLATONG CPP

EQUIPMENT CRITICALITY: **REQUIRED OPERATIONAL STATUS:**

ECA: 2 IC: N/A PLANT: N/A EQUIPMENT: N/A

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- SOLAR ENGINEERING STANDARD.
- RELIABILITY CENTER MAINTENANCE, RCM-001/2008

EQUIPMENT UNDER THIS ITPM TASK:

PL-SKG3970-PLCPP SKID; GEN SOL SATURN #1-PLCPP
 PL-SKG3971-PLCPP SKID; GEN SOL SATURN #2-PLCPP
 PL-SKG3975-PLCPP SKID; GEN SOL SATURN #3-PLCPP

- TURBINE DRIVE GENERATOR SET
- GENERATOR SET
- SKID OIL COOLER FAN
- SKID ENCLOSURE VENT FAN

SPARE PART LIST:

ITEM NO.	DESCRIPTION	P/N	QTY	UNIT	
53888 ✓	FILTER: AIR, TYPE ENGINE, Engine air inlet filter (Primary)		4	EA	PL00AD 1D-4
52017 ✓	FILTER: TYPE AIR, Engine air inlet filter (Secondary)		4	EA	
44265 ✓	FILTER: OIL, TYPE LUBE OIL, Lube oil filter		4	EA	PL00AA I-10
73796 ✓	GASKETS: TYPE OIL FILTER, Lube oil filter gasket		6	EA	PL00AA H-8-11
52731 ✓	O-RING: TYPE TURBINE, O-ring for lube oil filter cover		2	EA	
52736 ✓	O-RING: TYPE TURBINE, Bleed valve O-ring		1	EA	H-8-9
52671 ✓	O-RING: TYPE TURBINE, O-ring for bleed valve fitting		1	EA	H-8-11
48807 ✓	SEAL: TYPE RING, BLEED VALVE, Carbon seal for bleed valve		1	EA	H-7-7
48842 ✓	KIT: TYPE FILTER ELEMENT, Diesel filter		2	EA	I-10
71310 ✓	FILTER: LIQUID, High pressure diesel filter		1	EA	I-5-32



x. 48843 (Clean up)	FILTER, TYPE: FUEL GAS, Fuel gas filter	1	EA	
52732 ✓	O-RING: TYPE TURBINE, Injector gasket	9	EA	PLUGS H-8-9
52697 ✓	O-RING: TYPE TURBINE, ID 5/8IN, Injector O-ring to gas manifold	9	EA	" "
52679 ✓	O-RING: TYPE TURBINE, O-ring for fuel gas manifold	1	EA	H-8-1
48572 ✓	KIT: ELEMENT, Pilot gas filter	1	EA	H-7-2
71312 ✓	ELEMENTS: FILTER, Instrument air filter	1	EA	I-5-3
317279 ✓	BELTS: V, TYPE DRIVE, Lube oil cooler fan driving belts	2	EA	Hook-36
85648	SOLVENT: TYPE CLEANING, Ultrasonic cleaner	1	GA	
✓ 54143	CLEANERS: TYPE SURFACTANT, Detergent wash	1	PA	

JOB INSTRUCTIONS**MECHANICAL TASKS:**

COMPLETED

(YES) (NO)

1) CONDITION MONITORING:

1.1. REVIEW EFFICIENCY AND PERFORMANCE DATA.

(✓) ()

REMARK: _____

1.2. REVIEW VIBRATION SURVEY TRENDING FOR ENGINE AND BEARING CONDITION.

(✓) ()

REMARK: _____

1.3. REVIEW ENGINE LUBE OIL ANALYSIS FOR ANY ACIDITY AND WEAR DEBRIS, OIL FILTER DIFF. PRESSURE AND TOP UP RECORD, RESULT FROM LUBE OIL PROGRAM.

(✓) ()

REMARK: _____

1.4. REVIEW BORESCOPE RECORDS FOR ANY DISTRESS BURNT AND CRACKS FROM PREVIOUS RECORDS.

(✓) ()

REMARK: _____

2) PREVENTIVE MAINTENANCE TASKS:

2.1. SUBMIT PERMIT TO WORK AND LOCK OUT CERTIFICATE. COORDINATE WITH OPERATIONS TO MAKE EQUIPMENT AVAILABLE FOR PM ON EQUIPMENT.

(✓) ()

REMARK: _____

2.2. AFTER ENGINE SHUTDOWN, SHUT OFF GAS/DIESEL FUEL, STARTING SYSTEM.

(✓) ()

REMARK: _____

3) GENERAL VISUAL INSPECTION:

3.1. VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR FUEL AND OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTINGS AND NON-STANDARD CONDITIONS.

(✓) ()

REMARK: _____

3.2. TAKE READINGS AND RECORD RUNNING HOURS, ENGINE SPEED, PCD AND TEMPERATURE ON LOG SHEET. CHECK READINGS AGAINST BASELINE DATA EVALUATE RESULTS.

(✓) ()

REMARK: _____

4) ASSIST I/E TECH. TO SHUTDOWN ENGINE ON ONE OF THE SAFETY DEVICES.

(✓) ()

REMARK: _____

5) STARTING SYSTEM:

5.1. INSPECT STARTER CLUTCH IF APPLICABLE TO ENSURE LOCK-UP IN ONE DIRECTION AND FREE ROTATION.

(✓) ()

REMARK: _____

5.2. CHECK AND TOP UP LUBRICATOR OF STARTER.

(✓) () REMARKS:

- cleaned up starting gas strainer

5.3. VERIFY PROPER OPERATION OF STARTER WHEN UNIT IS RESTARTED.

(✓) () REMARKS:

6) ACCESSORY DRIVE:

6.1. INSPECT ACCESSORY GEARBOX BY OPEN FRONT COVER AND USE BOREScope FOR INSPECTION.

(✓)() REMARKS:

6.2. CHECK FOR LEAKAGE / LOOSENESS AND FIX.

(✓)() REMARKS:

7) REDUCTION GEARBOX AND DRIVE COUPLING:

7.1. INSPECT RGB FOR LEAKAGE / LOOSENESS AND FIX.

(✓)() REMARKS:

7.2. INSPECT DRIVE COUPLING FOR LOOSENESS, CORROSION AND ABNORMAL CONDITION.

(✓)() REMARKS:

8) AIR SYSTEM:

8.1. REPLACE PRIMARY AIR INLET FILTER.

(✓)() REMARKS:

P/N: PB1/000093F	STK: 53888	(4 EA)
P/N: HV2/000032F	STK: 52017	(4 EA)

8.2. TOP UP WATER TRAP.

(✓)() REMARKS:

8.3. INSPECT AIR INLET FILTER HOUSING FOR CRACK, LOOSENESS CORROSION AND ABNORMAL CONDITION.

(✓)() REMARKS:

8.4. INSPECT BLEED VALVE AND REPLACE CARBON SEAL, FITTING O-RING AND BLEED VALVE O-RING.

(✓)() REMARKS:

P/N: 44789-1	STK: 48807	(1 EA)
P/N: 355967R1	STK: 52671	(1 EA)
P/N: 953160C1	STK: 52736	(1 EA)

8.5. RECORD PRESSURE OF BLEED VALVE WHEN BEGIN MOVE TO FULLY CLOSE (SOLAR SPECIFICATION: BEGIN TO MOVE 33 TO 37 PSI. AND FULLY CLOSED 48 TO 54 PSI.)

BEGIN MOVE = 30 PSI., FULLY CLOSED = 50 PSI.
(accepto.)

(✓)() REMARKS:

Mech Specialist: Step 8.4-8.5
site)

(Require Mech Specialist to sign off at

9) LUBE OIL SYSTEM:

9.1. VISUAL INSPECT LUBE OIL PIPING, VALVES, PCV, TCV FOR LEAKAGE LOOSENESS AND CORROSION.

(✓)() REMARKS:

9.2. CHECK LEVEL OF LUBE OIL AND TOP UP AS REQUIRED.

(✓)() REMARKS:

9.3. CHANGE OUT THE LUBE OIL FILTER ELEMENT.

(✓)() REMARKS:

P/N: 186806-1	STK: 44265	(4 EA)
P/N: 918041C1	STK: 73796	(6 EA)
P/N: 912853C1	STK: 52731	(2 EA)

9.3. INSPECT LUBE OIL COOLER FAN AND CLEAN AS NECESSARY

(✓)() REMARKS:

9.4. INSPECT DRIVING BELTS. REPLACE IF REQUIRE.

(✓)() REMARKS:

9.5. LUBRICATE OIL COOLER FAN SHAFT BEARINGS.

(✓)() REMARKS:

9.6. REPLACE LUBE OIL COOLER FAN DRIVING BELT

(✓)() REMARKS:

P/N: A51	STK: 317279	(2 EA)
----------	-------------	--------

10) FUEL GAS AND LIQUID FUEL SYSTEM:

10.1. VISUAL INSPECT FUEL SYSTEM PIPING, PCV, EGF, ELF FOR LEAKAGE LOOSENESS AND CORROSION.

(✓) () REMARKS:

10.2. ^{Replaced} REPLACE FUEL GAS FILTER ELEMENT WHICH HAS BEEN USED AND SWITCH TO ANOTHER STANDBY FILTER. ^{no change}

(✓) () REMARKS:

P/N: 948066C2 STK: 48843 (1 EA)

10.3. REPLACE DIESEL SUPPLY FILTER AND HIGH-PRESSURE DIESEL FILTER.

(✓) () REMARKS:

P/N: 912555C3 STK: 48842 (2 EA)

P/N: 586A-25RN STK: 71310 (1 EA)

10.4. INSPECT IGNITER TORCH HOUSING FOR CRACKS & EROSION.

(✓) () REMARKS:

10.5. REMOVE INJECTOR FOR INSPECT AND CLEAN UP BY ULTRASONIC CLEANER.

(✓) () REMARKS:

P/N: PDC.UL. CLEANER 905 STK: 85648 (1 GA)

10.6. PERFORM BORESCOPE INSPECTION FOR INTERNAL PARTS AND HOT SECTION.

(✓) () REMARKS:

10.7. REPLACE INJECTOR GASKET AND O-RING.

(✓) () REMARKS:

P/N: 903508C1 STK: 52732 (9EA)

P/N: 903235C1 STK: 52697 (9EA)

10.8. REPLACE O-RING FOR FUEL GAS MANIFOLD.

(✓) () REMARKS:

P/N: 903509C1 STK: 52679 (1 EA)

10.9. INSPECT LIQUID FUEL PUMP FOR LEAKAGE, LOOSENESS AND CORROSION.

(✓) () REMARKS:

10.10. INSPECT COUPLING OF LIQUID FUEL PUMP. REPLACE IF REQUIRE.

(✓) () REMARKS:

10.11. REPLACE PILOT GAS FILTER.

(✓) () REMARKS:

P/N: 8007884R91 STK: 48572 (1 EA)

10.12. REPLACE INSTRUMENT AIR FILTER.

(✓) () REMARKS:

P/N: 3PU10-050 STK: 71312 (1 EA)

Mech Specialist: Step 10.6 site)

(Require Mech Specialist to sign off at

11) ENGINE CRANK SOAK WASH:

11.1. CARRY OUT DETERGENT WASH.

(✓) () REMARKS:

(GUIDELINE: RMC SOLUTION 2 TIMES AND WATER 1 TIME.)

P/N: RMC-G21 C/4 STK: 54143 (1 PA)

11.2. ALLOW SOAKING SETTLE FOR 15 MINUTES AND THEN CRANK ENGINE TO SPIN FLUID FROM ENGINE. ENSURE THAT FLUID IS CLEAN IF NOT PERFORM ENGINE WASH AGAIN UNTIL FLUID IS CLEAN.

(✓) () REMARKS:

12) FINAL INSPECTION:

12.1. CARRY OUT PRE-START INSPECTION.

(✓) () REMARKS:

12.2. COORDINATE WITH OPERATIONS/OTHER CRAFTS TO START ENGINE.

(✓) () REMARKS:

12.3. CHECK OPERATION OF BLEED AIR VALVE.

(✓) () REMARKS:

12.4. VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR FUEL AND OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTING AND NON-STANDARD CONDITIONS.

(✓) () REMARKS:



12.5. COORDINATE WITH OPERATIONS TO TEST THE FUEL CHANGEOVER SYSTEM. (✓) () REMARKS:

Gas to Liquid, Liquid to Gas.

12.6. TAKE READINGS AND RECORD RUNNING HOURS, ENGINE SPEED, PCD AND TEMPERATURE ON LOG SHEET. (✓) () REMARKS:

12.7. RETURN ENGINE TO NORMAL OPERATION. (✓) () REMARKS:

13) RUNNING DATA RECORDING:

Take load @ 300 kw.

A. AIR INLET FILTER DIFF. PRESSURE = 1.95 IN.H₂O.

B. PCD PRESSURE = 60 PSI.

C. LUBE OIL SUPPLY PRESSURE = 54 PSI.

D. LUBE OIL DIFF. PRESSURE = 4.9 PSID.

E. EXHAUST TEMP = 75# 815 °F

F. FUEL GAS PRESSURE = 149 PSI.

G. ENGINE VIBRATION = 0.294 IN/S.

H. GEARBOX VIBRATION = 13.6 G.

I. ENGINE RUNNING HOUR = 40,713 HRS.

14) RECORD ANY ABNORMAL CONDITIONS

(✓) () REMARKS:

15) FINAL CHECK:

15.1. ENSURE THE EQUIPMENT IS LEFT IN A SAFE CONDITION AND FIRE SUPPRESSION SYSTEM IS IN PLACE & GOOD HOUSE KEEPING.

(✓) () REMARKS:

15.2. SIGN OFF THE WORK PERMIT AND RETURN TO THE AREA CONTROLLER.

(✓) () REMARKS:

15.3. RAISE WORK ORDERS (PMI) FOR ANY MAJOR FOUND DURING PM PERFORMING OR NEED TO BE CONTINUED.

(✓) () REMARKS:

15.4. COMPLETE THE JOB REPORT AND DATA INPUT INTO THE CMMS.

(✓) () REMARKS:

15.5. MAINTENANCE SUPERVISOR HAS TO CHECK THE QUALITY, VALIDITY AND ACCURACY OF THE REPORTING AND THEN CLOSE OUT THE WORK ORDER.

(✓) () REMARKS:

=====

=====

Mechanics

COMPLETED BY: _____

DATE: 20 Aug 21



COMMENT:

Completed by Pomechan S. / Apichart P. / Phayungchan N. / Ekgaspon I.
Taweesak T.

Mech Specialist: _____, DATE: _____



NOX 1133 462

PLATONG - PM

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
01	05-Oct-14	Allocation meter calibration	0768/14	Surasak Kingphetrungrueng

JOB CARD NUMBER: 6M ULTRASONIC FLARE METER - PM
SKID/EQUIPMENT: PL-FLARE-GAS-METER-PLCPP METER, FLARE GAS FLOW MEASURE
OPT. SEQUENCE: 10 6M ULTRASONIC FLARE METER PM - IE
WORK CENTER: PLIE
CREW SIZE 2 **EST. MAN-HRS** 8 **RESOURCE DESCRIPTIONS**
IE PLATONG

EQUIPMENT CRITICALITY: C3**MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:**

- FLOW MEASUREMENT MANUAL Rev.2
- P&ID NO. 95913-10-157-PCP

EQUIPMENT UNDER THIS TASK:

1. ULTRASONIC FLARE METER; FE-3765, FQI-3765
2. PT-3765, TT-3765

JOB INSTRUCTIONS:**IE TASKS:****COMPLETED
(YES) (NO)****1) PREPARATION TO PERFORM PM TASK**

- | | | |
|---|---------|----------------|
| 1.1 COORDINATE WITH FE CONSTRUCTION TO PREPARE SCAFFOLDING AS REQUIRED | (✓) () | REMARKS: _____ |
| 1.2 COORDINATE WITH OPERATOR TO MAKE EQUIPMENT AVAILABLE FOR PM | (✓) () | REMARKS: _____ |
| 1.3 CERTIFIED PRESSURE CALIBRATORS OR OTHER CERTIFIED CALIBRATION EQUIPMENT | (✓) () | REMARKS: _____ |
| 1.4 CERTIFIED RESISTANCE DECADE BOX OR RTD OR CALIBRATOR AND THERMOMETER | (✓) () | REMARKS: _____ |

2) VISUAL INSPECTION:

- | | | |
|---|---------|----------------|
| 2.1 INSPECT ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR DAMAGES, LEAKS, LOOSE OR BROKEN CONNECTIONS | (✓) () | REMARKS: _____ |
|---|---------|----------------|

**3) PERFORM CALIBRATION CHECK ON TRANSMITTERS
PT-3765 AND TT-3765**

- | | | |
|---|---------|----------------|
| 3.1 FLUSH OUT PT-3765 IMPULSE LINES. | (✓) () | REMARKS: _____ |
| 3.2 VERIFY THE "AS FOUND" PRESSURE TRANSMITTERS PT-3765 AND RECORD THE READINGS | (✓) () | REMARKS: _____ |

PT-3765

DESIRED
INPUTDESIRED
OUTPUTAS FOUND
(PSIA)AS LEFT
(PSIA)



(PSIA)	(PSIA)	(%)	INC	DEC	INC	DEC
0.004	14.70	17.29	14.73	14.72	-	-
6.554	21.25	25.00	21.25	21.27	-	-
27.804	42.50	50.00	42.54	42.53	-	-
49.054	63.75	75.00	63.76	63.77	-	-
70.304	85.00	100.00	85.02	85.05	-	-

CRITERIA: ACCURACY WITH IN 0.1% OF SPAN

- 3.3 IF THE "AS FOUND" READINGS OF ANY PRESSURE TRANSMITTER FAIL TO MEET THE CRITERIA, MAKE THE ADJUSTMENT/CALIBRATION AND REPERFORM STEP 3.2 UNTIL THE RESULTS OF THAT PRESSURE TRANSMITTER MEET THE CRITERIA. THEN THE LATEST READINGS SHALL BE RECORDED AS "AS LEFT"

(✓) () REMARKS: _____

- 3.4 CONTINUE TO VERIFY THE "AS FOUND" FOR TEMPERATURE TRANSMITTER TT-3765 AND RECORD THE READINGS

(✓) () REMARKS: _____

SIMULATION (OHMS)	DESIRED OUTPUT (%)	DEG F)	AS FOUND (DEG F)	AS LEFT (DEG F)
92.896	0	0.00	0.03	-
101.217	25	37.50	37.49	-
109.488	50	75.00	75.03	-
117.708	75	112.50	112.51	-
125.877	100	150.00	150.12	-

CRITERIA: ACCURACY WITH IN 0.64 DEG F

- 3.5 IF THE "AS FOUND" READINGS FAIL TO MEET THE CRITERIA, MAKE THE ADJUSTMENT/CALIBRATION AND REPERFORM STEP 3.4 UNTIL THE RESULTS MEET THE CRITERIA. THEN THE LATEST READINGS SHALL BE RECORDED AS "AS LEFT"

() (✓) REMARKS: Normal

- 3.6 VERIFY TEMPERATURE SPOT READING AGAINST A CERTIFIED THERMOMETER

(✓) () REMARKS: _____

TT-3765 = 96.280°F CERTIFIED THERMOMETER = 96.250°F

4) FINAL INSPECTION:

- 4.1 RETURN THE SYSTEM TO SERVICE

(✓) () REMARKS: _____

- 4.2 RETRIEVE DIAGNOSTIC DATA AND COMPARE TO STANDARD VALUE TO ENSURE THAT ALL DATA WITHIN IN THE RANGE. RECORD VALUE IN THE TABLE.

(✓) () REMARKS: _____

- 4.3 CHECK SYSTEM FOR LEAKS

(✓) () REMARKS: _____

Check Diagnostic of Panametric GF868 at Control rooms details.

FQI-3765 HP FLARE METER DIAGNOSTIC DATA (BASELINE CONDITION)



Diagnostic Parameter	Display	Good	CH#1 (As found)	Remark
SS up	Display the signal strength for the upstream transducer	50-75	61.3	
SS do	Display the signal strength for the downstream transducer.	50-75	60.9	
Q up	Display the signal quality for the upstream transducer.	≥1200	1011	
Q down	Display the signal quality for the downstream transducer.	≥1200	1052	
AMP up	Display the value for the amplitude discriminator of the upstream transducer.	24, +/-5	24	
AMP down	Display the value for the amplitude discriminator of the downstream transducer.	24, +/-5	24	
P# up	Display signal peaks for the upstream transducer.	100-2300	557	
P# down	Display signal peaks for the downstream transducer.	100-2300	554	
Sndsp	Display sound speed of media in pipe	N/A	-	

5) PM TASK REPORT:

5.1 SCAN THIS JOB CARD AND ATTACH TO WORK ORDER.

✓ () REMARKS: _____

5.2 CLOSE PM WORK ORDER AND RECORD ANY CORRECTIVE ACTIONS IN CMMS

✓ () REMARKS: _____

COMPLETED BY Wuttipong C. KETUNAWASEK DATE 14 APR 2021.COMMENT _____

_____SUPERVISOR : Wuttipong C., DATE : _____

I/F Specialist



W0#1152039

PLATONG-PM

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1	14-Dec-16	CMO PM Strategy	0531/16	Pakorn S.
2	18-Mar-19	ADDING DAMPENER PM TASK	0197/19	Polake K.

JOB CARD NUMBER: 1Y HP FLARE KO DRUM PUMP#1 PM
SKID/EQUIPMENT: PL-P6710-PLOCPP2; PUMP; CONDY FLARE HPKO DRUM #1
OPT. SEQUENCE: 10 1Y HP FLARE KO DRUM PUMP#1 PM - I/E
WORK CENTER: PLIE

CREW SIZE	DURATION	EST. MAN-HRS	RESOURCE DESCRIPTIONS
2	4	8	INSTRUMENT & ELECTRICAL TECH., PLATONG

EQUIPMENT CRITICAL: **REQUIRED OPERATIONAL STATUS:**
ECA: C2 **IC:** N/A **PLANT:** ONLINE **EQUIPMENT:** ONLINE

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS TASK:

PL-P6710-PLOCPP2; PUMP; CONDY FLARE HPKO DRUM #1

- MODEL TD-60 UNION PUMP S/N CA5678C503
- MOTOR: RELIANCE 10 HP, FRAME 215T

SPARE PARTS REQUIREMENT.

STOCK	DESCRIPTION	PART NUMBER	QTY	UOM
NA				

JOB INSTRUCTIONS:

MECHANICAL TASKS:

COMPLETED
(YES) (NO)

1. PREPARATION FOR PM ACTIVITIES:

- A) COORDINATE WITH OPERATOR TO PERFORM TEST HP FLARE KO PUMP.
B) TURN OFF ELECTRICAL POWER SUPPLY TO PUMP.

(/) REMARKS: _____
(/) REMARKS: _____

2. VISUALLY INSPECT:

- A) INSPECT MECHANICAL PARTS FOR CLEANLINESS, LEAKS LOOSE OR BROKEN CONNECTIONS.
B) CHECK PUMP PERFORMANCE, ABNORMAL NOISE AND SMOOTH OPERATION.

(/) REMARKS: _____

(/) REMARKS: _____



C) CHECK THAT PUMP TEMPERATURE IS WITH NORMAL RANGE.

(/) REMARKS:

D) CLEAN SUCTION STRAINER.

(/) REMARKS:

E) CHECK PUMP SEAL AND PACKING FOR LEAKAGE.

(/) REMARKS:

F) CHANGE CRANKCASE OIL WITH CORENA P-100.

(/) REMARKS:

G) TURN PUMP ROTOR BY HAND FOR FREE MOVEMENT.

(/) REMARKS:

3. P-6715:

A) CHECK AND RECORD DAMPENERS'S N2 PRESSURE. (REPLACE IF REQUIRED)

NOTE: FOR N2 CHARGING, PLEASE FOLLOW OEM RECOMMENDATION. IF IN DOUBT, CONTACT MT ENGINEER TO GET THE EXISTING N2 PRESSURE VALUE. (SUCTION 1.6 BARS, DISCHARGE 10 BARS)

1) CHARGED SUCTION DAMPENER : 24 PSI

(/) REMARKS:

2) CHARGED DISCHARGE DAMPENER : 147 PSI

(/) REMARKS:

3) WORKING PRESSURE FOR SUCTION : 24 PSI

(/) REMARKS:

4) WORKING PRESSURE FOR DISCHARGE : 747 PSI

(/) REMARKS:

5) CONFIRM 1) < 3)

(/) REMARKS:

6) CONFIRM 2) < 4)

(/) REMARKS:

7) IF RECHARGING CONFIRM THE CHARGING CYLINDER IS MARKED AS CONTAINING N2.
(COLOR OF CYLINDER IS _____)

() () REMARKS:

B) CHECK COUPLING FOR SECURITY OR DAMAGE

(/) REMARKS:

C) CHECK AND CLEAN SUCTION/DISCHARGE VALVES IF LEAKS

(/) REMARKS:

D) CHECK CONNECTING ROD FOR SECURITY.

(/) REMARKS:

E) CHECK PACKING LUBRICATOR OIL LEVEL, CHANGE IF CONTAMINATED

(/) REMARKS:

F) CHECK SEAL OIL RESERVIOR LEVEL, DRAIN AND REFILL AS NECESSARY

(/) REMARKS:

H) CHECK REDUCTION GEARBOX OIL LEVEL, SPIRAX A90 OIL

(/) REMARKS:

I) CLEAN FRAME BREATHER.

(/) REMARKS:

4. FINAL CHECK:

A. RUN PUMP, CHECK FOR LEAKAGES, CHECK DISCHARGE PRESSURE.

(/) REMARKS:

B) RETURN PUMP TO NORMAL OPERATION.

(/) REMARKS:

=====

COMPLETED BY: Suthap / Se-ree / Natcharak , DATE: 31 Oct 2021

COMMENT:



SUPERVISOR:

[Signature]

DATE:

31 Oct 21



WO# 1152039

PLATONG

Revision	Date	Reason for Issue/Change	CMOR #	Enter by
1	14-Dec-16	CMO PM Strategy	0531/16	Pakorn S.
2	4 Oct 18	PASSS 4 Job task review	0920/18	Krittin S.

JOB CARD NUMBER:

1Y HP FLARE KO DRUM PUMP#1 PM

SKID/EQUIPMENT:

PL-P6710-PLOCPP2; PUMP; CONDY FLARE HPKO DRUM #1

OPT. SEQUENCE: 20

1Y HP FLARE KO DRUM PUMP#1 PM - I/E

WORK CENTER:

PLIE

CREW SIZE	DURATION	EST. HRS
2	4	8

RESOURCE DESCRIPTIONS

INSTRUMENT & ELECTRICAL TECH., PLATONG

EQUIPMENT CRITICAL:

ECA: C2

IC: N/A

REQUIRED OPERATIONAL STATUS:

PLANT: ONLINE

EQUIPMENT: ONLINE

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- N/A

EQUIPMENT UNDER THIS TASK:

PL-P6710-PLOCPP2; PUMP; CONDY FLARE HPKO DRUM #1

- MODEL TD-60 UNION PUMP S/N CA5678C503

- MOTOR: RELIANCE 10 HP, FRAME 215T

SPARE PARTS REQUIREMENT.

STOCK	DESCRIPTION	PART NUMBER	QTY	UOM
NA				

JOB INSTRUCTIONS:**ELECTICAL TASKS:**COMPLETED
(YES) (NO)**1) CONDITION MONITORING:**

- 1.1 REVIEW VIBRATION SURVEY TRENDING RECORD ON COOLER FAN MOTOR FOR BEARING CONDITIONS.

✓ () REMARKS _____

2) PREVENTIVE MAINTENANCE TASKS:

- 2.1 COORDINATE WITH PRODUCTION TO PERFORM ALARMS AND SHUTDOWN TASK.

✓ () REMARKS _____

- 2.2 ISOLATE ELECTRICAL POWER TO FAN MOTOR.

✓ () REMARKS _____

- 2.3 INSPECT ELECTRICAL AND INSTRUMENT SYSTEMS FOR LEAKS



OR LOOSE CONNECTIONS.

✓ () REMARKS _____

3) VISUAL INSPECTION:

3.1 REVIEW INSPECT ELECTRICAL AND INSTRUMENT SYSTEMS FOR LEAKS OR LOOSE CONNECTIONS.

✓ () REMARKS _____

4) MOTOR AND HEATERS: M-6710

4.1 GREASE FAN MOTOR BEARINGS IF GREASE FITTING PROVIDED.

✓ () REMARKS _____

4.2 PERFORM CHECK MOTOR INSULATION RESISTANCE:

IR = 6.51 G Ω , > 1.5 M Ω .

() REMARKS _____

4.3 CHECK GROUND CABLE RESISTANCE TO BE LESS THAN 1 OMHS.

() REMARKS _____

4.4 PERFORM CHECK MOTOR WINDING IMPEDANCE AND RECORD RESULT:

(U-V) = 1.4 Ω , (V-W) = 1.4 Ω , (W-U) = 1.4 Ω

() REMARKS _____

4.5 PERFORM CHECK MOTOR SPACE HEATER AND RECORD RESULT:

HTR RESISTANCE = 534.2 Ω / CURRENT = 0.2 A

✓ () REMARKS _____

4.6 CO-ORDINATE WITH PROD/MECH TO DE-ISOLATE POWER AND

TEST RUN, CHECK THE MOTOR CURRENT AND RECORD.

I1 = 10.4 A, I2 = 9.9 A, I3 = 9.8 A

✓ () REMARKS _____

5) FINAL CHECK:

5.1 RESTORE ELECTRICAL POWER, TEST RUN AND CHECK FOR PROPER

OPERATION AND RETURN UNIT TO NORMAL OPERATION.

✓ () REMARKS _____

COMPLETED BY: Supakorn B. Jeerayut T. DATE: 31 Oct 24

COMMENT:

SUPERVISOR:

DATE:

31 Oct 24

1157467

JOB CARD NUMBER:ANNUALLY SEWAGE TREATMENT UNIT PM

PACKAGE/EQUIPMENT:PL-PK7780-PLCPP2PACKAGE, SEWAGE TREATMENT UNIT

OPR. SEQUENCE:10ANNUALLY SEWAGE TREATMENT PM - I/E

WORK CENTER:PLIE

CREW SIZEEST.HRSRESOURCE DESCRIPTIONS

26INSTRUMENT/ELECTRICAL TECH., PLATONG

EQUIPMENT CRITICALITY: 3

- 1 CRITICAL
- 2 NORMAL
- 3 LOW

MFGR, REFERENCES AND ENGINEERING RECOMMENDATION:

1) RELIABILITY CENTERED MAINTENANCE, RCM 2009

2) EQUIPMENT CRITICALITY ASSESSMENT, ECA 2009

- EQUIPMENT UNDER THIS TASK
- 1) PL-PK7780-PLCPP2 : PACKAGE, SEWAGE TREATMENT UNIT
- PM-7780-1
- KM-7780-1
- Z7780-1
- T-7780-1
- T-7780-2
- LCP-7780-1
- XV-7780-1
- XV-7780-2
- XV-7780-3
- XV-7780-4
- XV-7780-5
- XV-7780-6

JOB INSTRUCTIONS

COMPLETED

(YES) (NO)

INSTRUMENT TASKS:

- 1) OBTAIN WORK PERMIT AND REVIEW HA/JSA AND CARRY OUT TOOLBOX MEETING.
- 2) COORDINATE WITH PRODUCTION TO MAKE EQUIPMENT AVAILABLE FOR SERVICE.
- 3) VISUALLY INSPECT ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR DAMAGE
FAULTS, LEAKS, LOOSE OR BROKEN CONNECTIONS. (✓) () REMARKS: _____
- 4) CALIBRATION AND ACCURACY CHECK OF THE FOLLOWING DEVICES:

4.1 LT-7780-1 : LEVEL IND. TRANSMITTER (✓) () REMARKS: _____

4.2 TSH-7780-1 : BOOK CELL (✓) () REMARKS: _____

4.3 LG-7780-1 : LEVEL GAUGE / GLASS (✓) () REMARKS: _____

4.4 FI-7880-1 : FLOW INDICATORS (✓) () REMARKS: _____

4.5 PCV-7780-1 : PRESSURE CONTROL VALVE SET AT 50 PSIG (✓) () REMARKS: _____

4.6 PCV-7780-2 : PRESSURE CONTROL VALVE SET AT 70 PSIG (✓) () REMARKS: _____
- 5) CHECK THE OPERATION OF THE FOLLOWING CONTROL & SOLENOID VALVES:

5.1 XV-7780-1 (✓) () REMARKS: _____

5.2 XV-7780-2 (✓) () REMARKS: _____

5.3 XV-7780-3 (✓) () REMARKS: _____

5.4 XV-7780-4 (✓) () REMARKS: _____

5.5 XV-7780-5 (✓) () REMARKS: _____

5.6 XV-7780-6 (✓) () REMARKS: _____
- 6) BOOK CELL INSPECTION:

6.1 PERFORM BOOK CELL MANUAL BACK FLUSH BEFORE OPENING.

6.2 ENSURE THAT ELECTRICAL POWER IS TURN OFF AND LOTO
AND CLOSED ISOLATION VALVES BEFORE OPENING.

6.3 OPEN BOOK CELL AND CLEAN SOLIDS BUILD UP, CLEAN
DEPOSITS FROM TERMINAL ANODES, CATHODES AND BI-POLAR
ELECTRODES USING SOFT BRUSH AND WATER.

6.4 CHANGE PARTS, O' RING IF REQUIRE.

6.5 REASSEMBLE BOOK CELL USING PROPER TORQUE 10 LB-FT.
- 7) RECHECK ALL ACCESSIBLE INSTRUMENT SYSTEMS FOR DAMAGE FAULTS,
LEAKS, LOOSE OR BROKEN CONNECTIONS. (✓) () REMARKS: _____

8) RETURN UNIT TO NORMAL OPERATION. (/) () REMARKS: _____

8.1 RESTORE AND OPERATE THE UNIT AS PER OPERATING PROCEDURE.

8.2 VERIFY AND RECORD BOOK CELL OF THE FOLLOWING:

DC VOLTS _____

AMPS _____

} Can't run unit due to drain and overboard was clog.

9) HOUSE KEEPING WORKING AREA & CLOSE WORK PERMIT. (/) () REMARKS: _____

ELECTRICAL TASKS:

1) VISUALLY INSPECT ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY, EXCESSIVE MOTOR VIBRATION AND NON STANDARD CONDITIONS. (/) () REMARKS: _____

2) CHECK & INSPECT UNIT CONTROL PANEL (LCP-7780-1) OF THE FOLLOWING: 2.1 PANEL INDICATOR LAMPS AND SWITCHES FOR DEFECTS. (/) () REMARKS: _____

2.2 CHECK MOTOR DRAWN CURRENT ON START UP:

PM-7780-1

I1= 1.0 AMP.

I2= 1.0 AMP.

I3= 1.0 AMP.

IR _____
15.7 Ω / 15.4 Ω / 15.7 Ω

(/) () REMARKS: _____

(/) () REMARKS: _____

(/) () REMARKS: _____

KM-7780-1

I1= 0.9 AMP.

I2= 0.9 AMP.

I3= 0.9 AMP.

IR. 3.6 MΩ
40.1 Ω / 39.3 Ω / 39.9 Ω

(/) () REMARKS: _____

(/) () REMARKS: _____

(/) () REMARKS: _____

2.3 CHECK AND INSPECT CONDITION OF TRANSFORMER. (/) () REMARKS: _____

3) ISOLATE ELECTRICAL POWER SUPPLY AS FOLLOW HA AND LOGOUT/TAG OUT PROCEDURE AND CARRY OUT THE FOLLOWING:

3.1 CHECK CABLE AND TERMINATION, VERIFY GROUNDED.

A) CHECK MOTOR INSULATION RESISTANCE = 11.2 GΩ

B) CHECK MOTOR WINDING RESISTANCE = 15.5 OHM/ph

C) CHECK SPACE HEATER = _____ OHM./AMP

3.2 CHECK HOLDDOWN BOLTS.

3.3 INSPECT MOTOR STARTER, CHECK CONTACTS FOR DEFECTS, CLEAN AS NECESSARY.

(/) () REMARKS: _____

(/) () REMARKS: _____

(/) () REMARKS: _____

(/) () REMARKS: _____

(/) () REMARKS: _____

4) RECHECK ALL ACCESSIBLE ELECTRICAL SYSTEMS FOR LOOSE OR BROKEN CONNECTIONS, DEFECTIVE CIRCUITRY, EXCESSIVE MOTOR VIBRATION AND NON STANDARD CONDITIONS. (/) () REMARKS: _____

5) RETURN UNIT TO NORMAL OPERATION. (/) () REMARKS: _____

6) HOUSE KEEPING WORKING AREA & CLOSE WORK PERMIT. (/) () REMARKS: _____

COMPLETED BY Sulphari S. Nontarat J.

DATE 21 Nov 21

COMMENT Can't run unit due to drain and overboard was clog refer w/o # 1173038

For. Sulphari S.
IE Spec. 21. Nov 21



<u>Revision</u>	<u>Date</u>	<u>Reason for Issue/Change</u>	<u>CMOR #</u>	<u>Enter by</u>
1	4 Oct 18	PASSS 4 Job task review	0920/18	Krittin S.

JOB CARD NUMBER: 1Y SEWAGE TREATMENT UNIT (PL-PK7780) PM MECH

SKID/ EQUIPMENT: PL-PK7780-PLCPP2 PACKAGE, SEWAGE TREATMENT UNIT

OPT. SEQUENCE: 20 1Y SEWAGE TREATMENT UNIT PM – MECH

WORK CENTER: PLMECH

<u>CREW SIZE</u>	<u>DURATION</u>	<u>EST. MAN-HRS</u>	<u>RESOURCE DESCRIPTIONS</u>
2	6	12	MECHANICAL, PLATONG

<u>EQUIPMENT CRITICALITY:</u>		<u>REQUIRED OPERATIONAL STATUS:</u>	
<u>ECA:</u> 3	<u>IC:</u> NA	<u>PLANT:</u> ONLINE	<u>EQUIPMENT:</u> OFFLINE

MFGR, INDUSTRY REFERENCES AND ENGINEERING RECOMMENDATION:

- 1) RELIABILITY CENTERED MAINTENANCE, RCM 2009
- 2) EQUIPMENT CRITICALITY ASSESSMENT, ECA 2009

EQUIPMENT UNDER THIS PM TASK:

- 1) PL-PK7780-PLCPP2 : PACKAGE, SEWAGE TREATMENT UNIT
 - P-7780-1
 - K-7780-1
 - Z-7780-1

SPARE PART LIST:

<u>STOCK</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>	<u>QTY</u>	<u>UOM</u>
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N/A

JOB INSTRUCTIONS**MECHANICAL TASKS:**COMPLETED
(YES) (NO)

- 1) OBTAIN WORK PERMIT AND REVIEW HA/JSA AND CARRY OUT TOOLBOX MEETING, ENSURE CORRECT PPE AVAILABLE. (✓) () REMARKS: _____
- 2) COORDINATE WITH PRODUCTION TO MAKE EQUIPMENT AVAILABLE FOR SERVICE. (✓) () REMARKS: _____



3) BEFORE SHUTTING DOWN SYSTEM FOR PM VISUALLY INSPECT ALL ACCESSIBLE PARTS FOR OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS, FITTINGS AND NON-STANDARD CONDITIONS.

(/) REMARKS: _____

4) COORDINATE WITH PRODUCTION/OTHER CRAFTS TO MAKE EQUIPMENT AVAILABLE FOR SERVICE, ISOLATE ELECTRICAL POWER TO MOTOR & PUMP & APPLY PAD LOCK

(/) REMARKS: _____

5) INSPECT ALL SIGHT GAUGES FOR CRACKED OR DAMAGED.

(/) REMARKS: _____

6) PERFORM CHECK AND INSPECT MACERATOR AND BLOWER ON THE FOLLOWING:

(/) REMARKS: _____

6.1 CHECK OIL LEVEL, TOP-UP OR CHANGE IF DIRTY.

(/) REMARKS: _____

6.2 CHECK MECHANICAL SEAL FOR LEAKAGES AND ADJUST OR CHANGE IF DAMAGED.

(/) REMARKS: _____

6.3 CHECK PUMP MOTOR COUPLING CONDITION.

(/) REMARKS: _____

6.4 CHECK CUTTER CLEARANCE ADJUST CUTTER RING IF WORN OR LOUDED CUTTING NOISE.

(/) REMARKS: _____

6.5 INSPECT BLOWER IMPELLER CONDITION, CLEAN IF DIRTY.

(/) REMARKS: _____

6.6 INSPECT BLOWER BEARING CONDITION (ADJUST CLEARANCE OR REGREASE IF REQUIRE)

(/) REMARKS: _____

6.7 INSPECT EJECTOR (Z-7780-1) CONDITION OR CLEANING.

7) RECHECK ALL ACCESSIBLE PARTS FOR OIL LEAKS, EXCESSIVE VIBRATION AND NOISE, LOOSE CONNECTIONS AND FITTINGS AND NON-STANDARD CONDITIONS.

(/) REMARKS: _____

8) RETURN UNIT TO NORMAL OPERATION.

(/) REMARKS: _____

9) HOUSE KEEPING WORKING AREA & CLOSE WORK PERMIT.

(/) REMARKS: _____

COMPLETED BY: Winit S. / Suradeh S. DATE: 21 Nov 21

COMMENT _____

SUPERVISOR: Raynat C. DATE: 21-Nov-21

Please put the data into cells that are highlighted in the following color

Data to be input before pigging

Data to be input after pigging

Note:

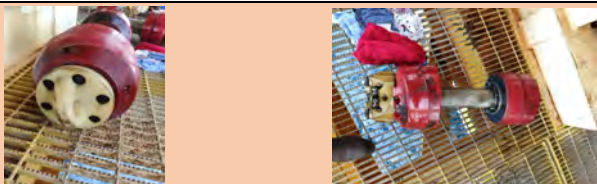
- 1) Please take pictures of pig and sludge recovered
- 2) Please identify the amount of recovered wax and sand. If no wax or sand recovered, please put "0" or "no"
- 3) If wax and sand mixes together and cannot be differentiate, please mention in the remark

Pigging Operation			
Field :	Platong	Date :	17-Feb-21
Pipeline:	10" PLWF	Pipeline Length (m):	1,845
From:	PLWF	To:	PLWA
Launcher Tag No.:	L-1040	Pig Receiver Tag No.:	R-1100
Affected WHPs	-		
Production lost	Gas	Condy	Oil
	0	0	0
Application:	Chemical Batching		
Total Number of Pigs Use:	2		
Launching Crew:	Patompong B.	Receiving Crew:	Mangkorn M.
	Jenwit J.		Sakorn A
	Boonyakan C.		Prakai S.
Launching team Onboard	9:00 AM	Recover team Onboard	7:15 AM
Launching team Ready	11:30 AM	Recover team Ready	13:00 PM
Note: Provide reason cause of delay. Take picture if have.			

1st Well S/I	10:20 AM	Sales gas rate (MMscfd)	240
S/I WHPFs Time	10:20 AM	Sales gas rate (MMscfd)	240
1st Pig to sea base	10:15 AM	Pig type	10" CUP PIG
Start Pumping time:	10:20 AM	Chemical:	CRO 28022
Stop Pumping Time:	10:50 AM	Amount Use (Litre):	200
2nd Pig Load into Pig barell	11:00 AM	Pig type	10" JET PIG
Start launch 1 m/s	10:10 AM	Gas rate (MMscfd)	3
Start launch 2 m/s	11:20 AM	Gas rate (MMscfd)	N/A
1st Pig recovered	13:00 PM	1st Pig condition	GOOD
2nd Pig recovered	13:00 PM	2nd Pig condition	Jet side was damage
1st Well Open	13:15 AM	Sales gas rate (MMscfd)	
Open back all wells	13:40 AM	Sales gas rate (MMscfd)	
Max Launcher Press (psig):	452	Max Receiver Press (psig):	425
Min Launcher Press (psig):	324	Min receiver Press (psig):	340
Launcher Temp (deg F):	-	Receiver Temp (deg F):	-
Chemical pump	N/A	Sludge Recovered L):	N/A
1 m/s travelling time	60 minute	Sand Recovered (Gal):	N/A
2 m/s travelling time	60 minute	Sand Recovered (Gal):	N/A

Biocide Chemical

Biocide Usage:	N/A	Chemical:	N/A
Start Pumping Date:	N/A	Amount Use (gal):	N/A
Stop Pumping Time:	N/A	Pumping Duration (hr):	N/A

Remark: Please also attach pictures of pig and sludge			
Operation Note:			