6720 South Macadam Avenue, Suite 300
Portland, Oregon 97219
503.670.1108

ANCHOR QEA

Weekly Summary Report

Project Name:	Gasco Sediments Site ISS Field Pilot Study		
Project No:	000029-02.85	**Report Date:**	October 24, 2023
Week of:	October 16, 2023	**Report No:**	6

Weekly Summary

Item	Approximate Production This Week	Approximate Total Cumulative Production	Approximate Task Percent Completion
Mobilization activities	NA	NA	100%
Dolphin pile removal	NA	NA	100%
Debris removal	6 cy	16 cy	100%
ISS auguring	31 columns	47 columns	>100%[1]
Swell material removal	80 cy	80 cy	NA[2]

Notes:

1. The task percent complete for in situ stabilization and solidification (ISS) auguring is based on the Work Plan-identified goal of 29 columns.
2. Long-term sampling port leveling: The U.S. Environmental Protection Agency (EPA)-approved Work Plan states, "If necessary, small-scale regrading of the target sampling locations may be performed by the swell materials removal excavator or divers to prepare a surface that is as flat and level as practicably possible," but the Work Plan does not provide a specific removal volume.

Work Performed This Period

Monday (10/16/2023)

Performed ISS auguring and ISS quality assurance/quality control (QA/QC) sample collection at columns 2-12 and 3-11. Refusal was encountered at column 2-12. Prepared for targeted debris removal near column 1-9 where subsurface debris was previously encountered, leading to refusal above the design 30-foot depth of contamination (DOC).

Tuesday (10/17/2023)

Performed targeted debris removal near column 1-9. Performed ISS auguring and ISS QA/QC sample collection at column 1-9. Refusal was encountered. Removed 8-foot auger bit on Bauer 28H drill rig and replaced with 3-foot auger bit for ISS auguring.

Wednesday (10/18/2023)

Performed ISS auguring using a single 3-foot auger bit and ISS QA/QC sample collection at columns 3-7 (refusal previously encountered prior to the design 30-foot DOC) and 6-0 (previously undrilled location). The 30-foot DOC was achieved for both columns. Performed removal of ISS-treated surface at rows 2 and 3 to create an approximately level plateau for installation of the long-term sampling ports.

Thursday (10/19/2023)

Performed removal of ISS-treated surface at rows 6, 7, and 8 to create an approximately level plateau for installation of the long-term sampling ports.

Friday (10/20/2023)

Mixed swell materials on barge and housekeeping and maintenance.

Saturday (10/21/2023)

No work was performed.

Water Quality Monitoring

Monday (10/16/2023)

Performed visual inspection of river outside the outer containment barriers during ISS auguring, and no turbidity plumes, sheens, or odors were observed. Four rounds of water quality monitoring were performed (three ebb tide and one flood tide) during ISS auguring activities, with field parameters collected. Performed visual inspection of river inside the containment booms and identified sheen that was generated from a known ebullition area that is not associated with construction activities.

Tuesday (10/17/2023)

Performed visual inspection of river outside the outer containment barriers during debris removal and ISS auguring activities, and no turbidity plumes, sheens, or odors were observed. Three rounds of water quality monitoring were performed (two ebb tide and one flood tide) during debris removal and ISS auguring activities, with field and chemical parameters collected at background stations NWN-BG1N and NWN-BG1S and compliance stations NWN-CS1N, NWN-CS2N, and NWN-CS2S. Performed visual inspection of river inside the containment booms and identified sheen that was generated from a known ebullition area that is not associated with construction activities.

Wednesday (10/18/2023) Performed visual inspection of river outside the outer containment barriers during ISS auguring and ISS-treated surface removal leveling activities, and no turbidity plumes, sheens, or odors were observed. Four rounds of water quality monitoring were performed (three ebb tide and one flood tide) during ISS auguring and ISS-treated surface removal leveling activities, with field and chemical parameters collected at background station NWN-BG1S and compliance station NWN-CS2N. Performed visual inspection of river inside the containment booms and identified sheen that was generated from a known ebullition area that is not associated with construction activities.
Thursday (10/19/2023) Performed visual inspection of river outside the outer containment barriers during ISS-treated surface leveling removal, and no turbidity plumes, sheens, or odors were observed. Two rounds of water quality monitoring were performed during ebb tide during ISS-treated surface leveling removal, with field and chemical parameters collected at background station NWN-BG1S and compliance stations NWN-CS1N and NWN-CS2N. Performed visual inspection of river inside the containment booms and identified sheen that was generated from a known ebullition area that is not associated with construction activities.
Friday (10/20/2023) No water quality monitoring was performed.
Saturday (10/21/2023) No work was performed.

Findings:

At one of the compliance stations (i.e., station CS-1N) during round 2 of monitoring on Tuesday, October 17, 2023, the following concentrations above the chronic and acute standards were detected:

- The benzo(a)anthracene concentration exceeded the chronic water quality criterion at the bottom depth only. The chronic criterion is based on a 4-day average concentration. The 1-day average concentration for the compliance station was below the chronic criterion.
- The benzo(a)pyrene concentration exceeded the acute and chronic criteria at the bottom depth only. The chronic criterion is based on a 4-day average concentration. The 1-day average concentration for the compliance station was below the chronic criterion.

The single exceedance of the acute concentration was reported to EPA at approximately 2:30 pm on Friday, October 20. Following consultation with EPA, no additional best management practices were triggered because work activities during the sampling were no longer being performed. A compilation of water quality daily field forms from the week (Attachments 1 through 4), tabulated field parameter data (Attachment 5), and tabulated chemistry data (Attachment 6) are attached.

For Informational Purposes Only

In accordance with EPA's comments on the EPA-approved *Final Revised In Situ Stabilization and Solidification Field Pilot Study Work Plan*,[1] for informational purposes only, pH and temperature samples were collected from the moonpool prior to initiation of ISS auguring and following completion of ISS auguring and prior to raising the moonpool curtain. These informational moonpool measurements are included in Attachment 7.

Scheduled Construction Work This Week (Next Reporting Week)

Continue focused ISS-treated surface removal to facilitate installation of the long-term sampling ports, place clean sand over the dolphin removal footprint, and begin demobilization.

Problems Encountered and Contingency Actions Implemented

Due to the presence of encountered subsurface debris during ISS auguring at columns 2-12 and 1-9, ISS treatment was extended to 25.2 and 29 feet below mudline, respectively, relative to the target 30-foot DOC.

[1] Anchor QEA, LLC, 2023. *Final Revised In Situ Stabilization and Solidification Field Pilot Study Work Plan*. Gasco Sediments Project Area. Prepared for U.S. Environmental Protection Agency, Region 10. September 12, 2023.

Prepared by:	Kendra Skellenger	**Contact Information:**	503-752-4218 kskellenger@anchorqea.com
cc:	Bob Wyatt, Patty Dost, Mike Crystal, Tim Donegan, Taylor Crystal, Gary Rose, Joe Burke, Rob Ede, Jen Mott, Ryan Barth, Tim Stone, Ben Uhl, Billie-Jo Gauley, Joe Smith, Ross Pickering, Louisa Orr, Elizabeth Greene		
Attachments:	Attachment 1 Daily Monitoring Logs Attachment 2 Water Quality Monitoring Calibration Log Attachment 3 Water Quality Monitoring Forms – Field Parameters Attachment 4 Water Quality Sampling Forms – Chemical Parameters Attachment 5 Water Quality Field Parameter Measurements Attachment 6 Water Quality Chemical Parameter Measurements Attachment 7 Moonpool Informational Measurements		

Photographs

Photograph 1

Performing ISS auguring at column 3-11 to 30 feet below mudline (10/16/2023).

Photograph 2

Collecting ISS QA/QC sample from middle interval of column 3-11 (10/16/2023).

Photograph 3

Attaching 3-foot auger bit to Bauer 28H drill rig (10/17/2023).

Photograph 4

Performing ISS-treated surface leveling removal near rows 2 and 3. Swell material barge in foreground (10/18/2023).

Attachment 1
Daily Monitoring Logs

Daily Monitoring Log
Gasco Sediments Site ISS Pilot Study

ANCHOR QEA

Anchor QEA, LLC
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Phone 503.670.1108

Date: 10-16-2023

Personnel: Simon Dudenhoefer

Wind from: N | NE | E | SE | (S) | SW | W | NW | NONE | LIGHT | (MEDIUM) | HEAVY

SUNNY | ~~CLOUDY~~ | ~~RAIN~~

Temperature: (°F) 59 °C (Circle appropriate units)

Time	Comments
0620	Arrive @ Gasco Trailer → print field forms → Calibrate YSI
0700	H/S meeting: wet, slippery surfaces entering - exiting boat,
——	crossing booms, low visibility on river in heavy rain → extra caution
0730	ISS Drilling Start time → Start WQM Circuit #2 @ 0830
——	Tides: High @ 0644, Low @ 1331, High @ 1842
0825	ON WATER → To BG-1S (downriver flow confirmed visually +
——	w/ NOAA tidal data + USGS Morrison Bridge Gauge data
0830	@ BG-1S, confirmed 300' boom distance w/ range finder
——	Confirmed Garmin depth reading w/ lead line
0902	@ EW-1N, confirmed 100' boom dist. w/ range finder
0910	@ CS-1N, " " 150' " "
0918	@ CS-2N, " "
0936	Finish WQM C#1 → NO EXCEEDANCES → WQM C#2 @ 1030
0940	OFF WATER
1020	ON WATER → To BG-1S for WQM C#2 (ebb tide)
1030	@ BG-1S, confirmed 300' boom dist. w/ range finder
1055	@ EW-1N, " " 100' " "
1106	@ CS-1N, " " 150' " "
1114	@ CS-2N, " "
1120	Finish WQM C#2 → NO EXCEEDANCES → WQM C#3 @ 1230
1125	OFF WATER
1215	ON WATER → To BG-1S for WQM C#3 (ebb tide)
1230	@ BG-1S, confirmed 300' boom dist. w/ range finder
1240	@ EW-1N, " " 100' " "
1247	@ CS-1N, " " 150' " "
1257	@ CS-2N, " "
1305	Finish WQM C#3 → NO EXCEEDANCES → WQM C#4 @ 1430
1310	OFF WATER
1425	ON WATER → TO BG-1N for WQM C#4 (tide flipped, river
——	flow upstream, confirmed visually + w/ USGS + NOAA tidal data

Signature:

Cont. →

Daily Monitoring Log
Gasco Sediments Site ISS Pilot Study

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Phone 503.670.1108

Date: 10-16-2023

Personnel: Simon Dutenhoefer

Wind from: N | NE | E | SE | (S) | SW | W | NW

NONE | LIGHT | (MEDIUM) | HEAVY

SUNNY | (CLOUDY) | (RAIN)

Temperature: (°F) 63 °C

(Circle appropriate units)

Time	Comments
1430	@ BG-1N, confirmed 300' boom distance w/ range finder
1444	@ EW-1S, " " 100' " "
1452	@ CS-1S, " " 150' " "
1500	@ CS-2S, " "
1505	Finish WQM C#4 → NO EXCEEDANCES → start WQM C#5
—	@ 1630 OR 1-hour after excavation start time
1510	OFF WATER
—	No further construction activities today → no more WQM

Signature: _____

Daily Log

ANCHOR QEA

Anchor QEA, LLC
6720 South Macadam Ave, Suite 300
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PROJECT NAME: GASCO ISS PILOT STUDY
PROJECT #:
SITE ADDRESS: GASCO

DATE: 10-17-2023
WORK: ISS WQM
PERSONNEL: Simon Dudenhoefer

WEATHER: WIND FROM: N | NE | E | (SE) | S | SW | W | NW
SUNNY | (CLOUDY) | RAIN | FOGGY?

NONE | (LIGHT) | MEDIUM | HEAVY

TEMPERATURE: (F) 55 . °C
[Circle appropriate units]

TIME	COMMENTS
0610	Arrive @ Gasco Trailer → calibrate YSI
0650	H/S meeting: foggy, less visibility on river → put lights on boat, wet surfaces entering/exiting boat, staying warm → proper clothes
0738	Excavation start time → WQM circuit #1 start @ 0808
——	Tides: High @ 0723, Low @ 1403, High @ 1917
0800	ON WATER → To BG-1S for WQM circuit #1 (ebb tide)
——	River flow downstream → confirmed visually + w/ USGS and
——	NOAA tidal data / discharge data
0808	@ BG-1S, confirmed Garmin depth reading w/ lead line
——	Confirmed 300' boom distance w/ range finder → Decon Van/Dock
0815	Collected NWN-BG1S-231017 0815 @ BG-1S @ 1' → Decon
0820	Collected NWN-BG1S-231017 0820 @ BG-1S @ 21.1' (MS/MSD) → Decon
0825	Collected NWN-BG1S-231017 0825 @ BG-1S @ 39.2' → Decon
0834	@ EW-1N, confirmed 100' boom dist. w/ range finder
0842	@ CS-1N, " " 150' " "
0851	@ CS-2N, " " " "
——	CS-2N had highest Compliance station turbidity (7.12) →
——	collected chemistry samples @ each depth interval
0905	Collected NWN-CS2N-231017 0905 @ CS-2N @ 1' → Decon
0910	Collected NWN-CS2N-231017 0910 @ CS-2N @ 24' → Decon
0915	Collected NWN-CS2N-231017 0915 @ CS-2N @ 45' → Decon
——	Finish WQM Circuit #2 → NO EXCEEDANCES → Start WQM #2 @ 1008
0920	OFF WATER
1005	ON WATER → To BG-1S for WQM Circuit #2 (ebb tide)
1008	@ BG-1S, confirmed 300' boom dist. w/ range finder
1020	Collected NWN-BG1S-231017 1020 @ BG-1S @ 1' → Decon
1025	Collected NWN-BG1S-231017 1025 @ BG-1S @ 21.1' → Decon
1030	Collected NWN-BG1S-231017 1030 @ BG-1S @ 39.2' → Decon
1035	@ EW-1N, Confirmed 100' boom distance w/ range finder

Signature:

Daily Log

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PROJECT NAME: GASCO ISS PILOT STUDY
DATE: 10-17-2023
PROJECT #:
WORK: ISS WQM
SITE ADDRESS: GASCO
PERSONNEL: Simon Dudenhoefer

WEATHER: WIND FROM: N | NE | (E) | SE | S | SW | W | NW
SUNNY | (CLOUDY) | RAIN | ?
NONE | (LIGHT) | MEDIUM | HEAVY
TEMPERATURE: (60) . °C [Circle appropriate units]

TIME	COMMENTS
1044	@CS-1N, confirmed 150' boom distance w/ range finder
1051	@CS-2N, " "
1100	collecting chemistry samples @ CS-1N @ each depth interval
———	CS-1N had the highest NTU reading of the compliance stations
1103	@ CS-1N for sample collection, confirmed 150' boom dist
1110	Collected NWN-CS1N-231017 1110 @ CS-1N @ 1' → Decon
1115	Collected NWN-CS1N-231017 1115 @ CS-1N @ 22.7' → Decon
1120	Collected NWN-CS1N-231017 1120 @ CS-1N @ 42.4' → Decon
———	Finish WQM Circuit #2 → NO EXCEEDANCES → Excavation complete
1125	OFF WATER → waiting to start WQM Circuit #3 until
———	ISS Barges re-configured and ISS drilling starts → wait 1 hr
1257	Barge back in place, will start WQM Circuit #3 1 hour
———	after ISS drilling starts → still collecting chemistry samples
1330	ISS Drilling start time → WQM Circuit #3 start @ 1430
———	Low tide @ 1403 → river may be @ slack @ start of WQM C#3
———	will switch to upriver flow during round. Will start WQM C#3
———	@ BG-1N for flood tide circuit. "
1422	Upstream flow visually confirmed
1429	ON WATER → TO BG-1N for WQM C#3
1430	@ BG-1N, confirmed 300' boom distance w/ range finder
1440	Collected NWN-BGIN-231017 1440 @ BG-1N @ 1' → Decon
1445	Collected NWN-BGIN-231017 1445 @ BG-1N @ 21' → Decon
1450	Collected NWN-BGIN-231017 1450 @ BG-1N @ 39' → Decon
1453	@ EW-1S, confirmed 100' boom dist. w/ range finder
1502	@ CS-1S, " " 150' " "
1520	CS2S had highest NTU → Collected NWN-CS2S-231017 1520 @ 1' → Decon
1525	Collected NWN-CS2S-231017 1525 @ 24.3' → Decon
1530	Collected NWN-CS2S-231017 1530 @ 45.6' → Decon → Finish WQM C#3
1540	OFF WATER → ISS drilling finished → no more WQM ↳ NO EXCEEDANCES

Signature: _____

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Date: 10-18-2023
Personnel: Simon Dudenhoefer

Wind from:	(N)	NE	E	SE	S	SW	W	NW	NONE	(LIGHT)	MEDIUM	HEAVY
	SUNNY	(CLOUDY)	RAIN	FOGGY					Temperature:	(C) 47 °C		

[Circle appropriate units]

Time	Comments
0620	Arrive @ Gasco → Calibrate YSI, prep sample containers
0710	H/S meeting: very thick fog today, very low visibility → lights on
—	boat, extra caution navigating in river + around drill barge →
—	boat horn location, PFDs, slip, trips, falls, overhead hazards near barge
0742	TIDES: HIGH @ 0805, LOW @ 1438, HIGH @ 1957
—	WQ: Temp: 15.1°C, pH: 7.4, DO: 10.8 mg/L, Turbidity: 2.6 FNU
—	WILL CONTINUE COLLECTING CHEMISTRY SAMPLES TODAY
0746	ISS Drilling Start time → Start WQM Circuit #1 @ 0846 (EBB tide)
0835	ON WATER → To BG-1S for WQM C#1 - EBB Tide
0846	@ BG-1S, heavy fog, unable to use range finder to determine boom dist.
—	↳ using pre-set GPS coordinates
—	Confirmed river flow direction (downstream) visually + w/ tidal data (USGS/NOAA)
—	Confirmed Garmin depth reading w/ lead line → Decon Van Dorn Sampler
0850	Collected NWN-BG1S-231018 0850 @ 1' → Decon
0855	Collected NWN-BG1S-231018 0855 @ 21.5' → Decon
0900	Collected NWN-BG1S-231018 0900 @ 40' → Decon
0908	@ EW-1N, used GPS coordinates, ~~can't~~ SD can't see boom due to
—	swell barge location
0919	@ CS-1N, confirmed 150' boom distance w/ range finder
0930	@ CS-2N, " "
0940	CS-2N has highest compliance station turbidity → collecting chem. samples
0945	Collected NWN-CS2N-231018 0945 @ 1' → Decon
0950	Collected NWN-CS2N-231018 0950 @ 29.3' → Decon
0955	Collected NWN-CS2N-231018 0955 @ 45.6' → Decon
—	FINISH WQM Circuit #1 → NO EXCEEDANCES → C#2 @ 1046
1000	OFF WATER
1035	ON WATER → To BG-1S for WQM Circuit #2 (EBB tide)
1046	@ BG-1S, confirmed 300' boom dist. w/ range finder
1050	Collected NWN-BG1S-231018 1050 @ 1' → Decon
1055	Collected NWN-BG1S-231018 1055 @ 21.5' → Decon

Signature:

Cont →

Daily Monitoring Log
Gasco Sediments Site ISS Pilot Study

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Date: 10-18-2023
Personnel: Simon Dudenhoefer

Wind from: (N) NE E SE S SW W NW NONE (LIGHT) MEDIUM HEAVY
(SUNNY) CLOUDY RAIN
Temperature: 56 °C
[Circle appropriate units]

Time	Comments
1100	Collected NWN-BGIS-231018 1100 @ 40' → Decon
1108	@ EW-1N, confirmed 100' boom distance w/ range finder
1118	@ CS-1N, " " 150' " "
1126	@ CS-2N, " "
1130	CS-2N had highest compliance station NTU reading → collecting samples
1135	Collected NWN-CS2N-231018 1135 @ 1' → Decon
1140	Collected NWN-CS2N-231018 1140 @ 23.8' → Decon
1145	Collected NWN-CS2N-231018 1145 @ 44.6' → Decon
——	Finish WQM circuit #2 → NO EXCEEDANCES → #3 @ 1246
1155	OFF WATER
1240	ON WATER → To BG-1S for WQM C#3 (ebb tide)
1246	@ BG-1S, confirmed 300' boom dist. w/ range finder
1255	Collected NWN-BG1S-231018 1255 @ 1' → Decon
1300	Collected NWN-BG1S-231018 1300 @ 19.4' → Decon
1305	Collected NWN-BG1S-231018 1305 @ 35.8' → Decon
1314	@ EW-1N, confirmed ~~BSD~~ 100' boom dist. w/ range finder
1326	@ CS-1N, " " 150' " "
1335	@ CS-2N, " "
1340	CS-2N had highest turbidity of CS, collecting sample @ each depth
1345	Collected NWN-CS2N-231018 1345 @ 1' → Decon
1350	Collected NWN-CS2N-231018 1350 @ 23' → Decon
1355	Collected NWN-CS2N-231018 1355 @ 43' → Decon
——	Finish WQM circuit #3 → NO EXCEEDANCES
1405	OFF WATER → WQM Circuit #4 start @ 1446
1440	UNABLE TO START WQM C#4 due to re-configured
——	construction barges → NO BOAT EXIT (NO CONSTRUCTION
——	OCCURRING – WILL start WQM C#4 when swell
——	removal continues and there is a safe way for
——	the WQM boat to leave the boom configuration
——	

Signature:

Cont →

Daily Monitoring Log
Gasco Sediments Site ISS Pilot Study

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6720 South Macadam Avenue, Suite 300
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Phone 503.670.1108

Date: 10-18-2023
Personnel: Simon Dudenhoefer

Wind from: (N) | NE | E | SE | S | SW | W | NW | NONE | (LIGHT) | MEDIUM | HEAVY
(SUNNY) | CLOUDY | RAIN |

Temperature: (°F) 69 °C
(Circle appropriate units)

Time	Comments
1605	ON WATER → To BG-1N for WQM C#4 (flood tide)
1621	@ BG-1N, confirmed 300' boom distance w/ range finder
1630	Collected NWN-BG1N-2310181630 @ 1' → Decon
1635	Collected NWN-BG1N-2310181635 @ 21.1' → Decon
1640	Collected NWN-BG1N-2310181640 @ 39.2' → Decon
1643	@ EW-1S, confirmed 100' boom distance w/ range finder
1649	@ CS-1S, " " 150' " "
1656	@ CS-2S " "
1655	CS-2S has highest compliance station turbidity reading @45'
1705	3.67 NTU → collected NWN-CS2S-2310181705 @ 1' → Decon
1710	Collected NWN-CS2S-2310181710 @ 24' → Decon
1715	Collected NWN-CS2S-2310181715 @ 45' → Decon
—	Finish WQM Circuit #4 → NO EXCEEDANCES
—	To Cathedral Park boat ramp to take boat off water
1720	OFF WATER → NO FURTHER WQM TODAY

Signature:

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Date: 10-19-2023
Personnel: Simon Dutenhoefer

Wind from: (N) | NE | E | SE | S | SW | W | NW | NONE | (LIGHT) | MEDIUM | HEAVY
SUNNY | CLOUDY | RAIN | (FOGGY)
Temperature: (°F) 49 °C
[Circle appropriate units]

Time	Comments
0605	Arrive @ Gasco Trailer, print field forms, calibrate YSI
0630	H/S meeting: foggy again, launching boat @ Cathedral Park
——	→ extra caution on river, lights, horn, throwable location
——	TIDES: Low @ 0510, HIGH @ 0853, LOW @ 1537, HIGH @ 2041
0745	Swell removal start time → start WQM Circuit #2 @ 0845
0800	To Cathedral Park boat launch to put boat in water
0830	ON WATER → To work site, tide high @ 0853, currently
——	slack (confirmed w/ velocimeter (0.036) + tidal charts + visually)
——	→ will start WQM #2 @ BG-1S as flow will be downriver
——	around 0850
0845	@ BG-1S, confirmed 300' boom distance w/ rangefinder
——	confirmed Garmin depth reading w/ lead line → Decon VanDorn
0900	Collected NWN-BG1S-231019 0900 @ 1' → Decon
0905	Collected NWN-BG1S-231019 0905 @ 20.2' → Decon
0910	Collected MS/MSD QS sample NWN-BG1S-231019 0910 @ 37.4' → Decon
0916	@ EW-1N, confirmed 100' boom distance w/ range finder
0930	@ CS-1N, " " 150' " "
0943	@ CS-2N " "
0950	CS-2N had highest CS NTU @ 44.4' (4.58) → collecting samples here
0955	Collected NWN-CS2N-231019 0955 @ 1' → Decon
1000	Collected NWN-CS2N-231019 1000 @ 23.7' → Decon
1005	Collected NWN-CS2N-231019 1005 @ 44.4'
——	collected QC Field Dup Sample ~~NWN-CS2N-231019~~ SD
——	NWN-CS102N-231019 1005 → Decon
——	Finish WQM Circuit #1 → NO EXCEEDANCES
1010	Swell removal excavator broken, no further WQM until
——	it is fixed and in operation/conducting sediment
——	disturbing construction activities → Confirmed w/ Doug L.
1014	Tied off to survey boat → ON WATER waiting
——	to start WQM Circuit #2

Signature: _____

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Phone 503.670.1108

Date: 10-18-2023
Personnel: Simon Dudenhoefer

Wind from: (N) | NE | E | SE | S | SW | W | NW | NONE | (LIGHT) | MEDIUM | HEAVY
(SUNNY) | CLOUDY | RAIN

Temperature: 9.63 °C
[Circle appropriate units]

Time	Comments
1347	Swell Removal Start time → Start WQM Circuit #2
—	@BG-1S, confirmed 300' boom distance w/rangefinder
1355	Collected NWN-BG1S-231019 1355 @ 1' → Decon
1400	Collected NWN-BG1S-231019 1400 @ 20.8' → Decon
1405	Collected NWN-BG1S-231019 1405 and QC sample
—	Field dup. NWN-BG101S-231019 1405 @ 38.6' → Decon
1408	@ EW-1N, confirmed 100' boom dist, w/ range finder
1419	@ CS-1N, " " 150' " "
1427	@ CS-2N " "
1435	CS-1N has highest CS NTU @ 41.2' (5.2%) → collecting sample
1436	@ CS-1N confirmed 150' boom distance w/ range finder
1440	Collected NWN-CS1N-231019 1440 @ 1' → Decon
1445	Collected NWN-CS1N-231019 1445 @ 22.5' → Decon
1450	Collected QC MS/MSD sample NWN-CS1N-231019 1450 @ 42' → Decon
—	Finish WQM Circuit #2 → NO EXCEEDANCES
1500	To Cathedral Park Boat Ramp
1520	OFF WATER

Signature:

Attachment 2
Water Quality Monitoring Calibration Logs

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 98219

Water Quality Monitoring – Calibration Log Form
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023
Probe S/N: 21E103678

Calibrated by: Simon Dudenhoefer
Meter(s) Model: YSI ProDSS #6970

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.00	3660021	07/25	7.10	7.04	13.5	Δ standard for temp.
pH 4.00 (Standard Units)	4.00	36F1085	06/25	4.05	4.00	13.7	
Dissolved Oxygen (DO)[1]	99.7	NA	NA	99.6	99.7	19.3	AIR
Turbidity (NTU)[1]	0	NA	NA	0.14	0.00	14.1	DI WATER
Turbidity (NTU)[1]	124	23F24003635	06/24	121.41	124.01	14.1	

Date:
Probe S/N:

Calibrated by:
Meter(s) Model:

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.00						
pH 4.00 (Standard Units)	4.00						
Dissolved Oxygen (DO)[1]							
Turbidity (NTU)[1]		DID NOT CALIBRATE		OR USE YSI #5006			
Turbidity (NTU)[1]							

Note:

1. Calibration standards are entered by hand depending on the monitoring instrument being used.

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 98219

Water Quality Monitoring – Calibration Log Form
Gasco Sediments Site ISS Pilot Study

Date: 10-17-2023
Probe S/N: 21E103678

Calibrated by: Simon Dudenhoefer
Meter(s) Model: YSI ProDSS #6970

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.06	3GG0021	07/25	6.99	7.07	11.3	A standard for temp
pH 4.00 (Standard Units)	4.00	3GF1085	06/25	3.92	4.00	11.6	
Dissolved Oxygen (DO)[1]	100.8	NA	NA	101.3	100.7	19.3	AIR
Turbidity (NTU)[1]	0	NA	NA	-0.13	0.00	11.7	DI WATER
Turbidity (NTU)[1]	124	23F24003635	06/24	121.28	123.90	11.7	

Date:
Probe S/N:

Calibrated by:
Meter(s) Model:

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.00						
pH 4.00 (Standard Units)	4.00						
Dissolved Oxygen (DO)[1]							
Turbidity (NTU)[1]		YSI #5006 NOT CALIBRATED OR USED					
Turbidity (NTU)[1]			SD 10/17/23				

Note:

1. Calibration standards are entered by hand depending on the monitoring instrument being used.

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 98219

Water Quality Monitoring – Calibration Log Form
Gasco Sediments Site ISS Pilot Study

Date: 10-18-2023
Calibrated by: Simon Dudenhoefer
Probe S/N: 21E103678
Meter(s) Model: YSI ProDSS #6970

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.00	3GG0021	07/25	7.07	7.08	9.7	Δ standard for temp
pH 4.00 (Standard Units)	4.00	3GF1085	06/25	4.05	4.00	10.7	
Dissolved Oxygen (DO)[1]	100.4	NA	NA	100.2	100.5	17.4	AIR
Turbidity (NTU)[1]	0	NA	NA	0.03	0.00	10.0	DI WATER
Turbidity (NTU)[1]	124	23F2400363S	06/24	121.91	123.91	10.0	

Date:
Calibrated by:
Probe S/N:
Meter(s) Model:

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.00						
pH 4.00 (Standard Units)	4.00						
Dissolved Oxygen (DO)[1]							
Turbidity (NTU)[1]			DID NOT USE OR CALIBRATE			YSI #5006	SD
Turbidity (NTU)[1]							

Note:

1. Calibration standards are entered by hand depending on the monitoring instrument being used.

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 98219

Water Quality Monitoring – Calibration Log Form
Gasco Sediments Site ISS Pilot Study

Date: 10-19-2023
Calibrated by: Simon Dudenhoefer
Probe S/N: 21E103678
Meter(s) Model: YSI ProDSS 6970

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
pH 7.00 (Standard Units)	7.07 SD	3GG0021	07/25	7.09	7.08	10.6	Δ standard for temp
pH 4.00 (Standard Units)	4.00	3GF1085	06/25	4.02	4.00	10.7	
Dissolved Oxygen (DO)[1]	100.3	NA	NA	100.9	100.3	17.6	AIR
Turbidity (NTU)[1]	0	NA	NA	0.07	0.00	11.2	DI WATER
Turbidity (NTU)[1]	124	23F24003635	06/24	120.54	~~123.94~~ SD → 124.04	11.2	

Date:
Calibrated by:
Probe S/N:
Meter(s) Model:

Parameter	Calibration Standard	Standard Lot No.	Expiration Date	Initial Calibration	Final Calibration	Temperature	Comments
~~pH 7.00 (Standard Units)~~	7.00						
pH 4.00 (Standard Units)	4.00						
Dissolved Oxygen (DO)[1]							
Turbidity (NTU)[1]							
~~Turbidity (NTU)[1]~~		DID NOT CALIBRATE OR USE YSI #5006 SD					

Note:

1. Calibration standards are entered by hand depending on the monitoring instrument being used.

Attachment 3
Water Quality Monitoring Forms – Field Parameters

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 1

Station: (BG) EW CS-1 CS-2 N (S) **Time:** 0830

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.759

Lat/Northing: 45.57879 Long/Easting: 122.75405 **Total Water Depth:** 43

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.65	7.11	10.35	15.5
Middle	21.5	1.90	7.13	10.34	15.5
Deep	40	2.26	7.11	10.29	15.5

Comments[1]: No sheen, odor, discoloration, or suspended material observed

Construction Activity: ISS Drilling

Station: BG (EW) CS-1 CS-2 (N) S **Time:** 0902

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.474

Lat/Northing: 45.58011 Long/Easting: 122.75701 **Total Water Depth:** 45

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.91	7.13	10.36	15.5
Middle	22.5	1.95	7.11	10.30	15.5
Deep	42	2.29	7.17	10.28	15.5

Comments[1]: No sheen, odor, discoloration, or suspended material observed

Construction Activity:

Recorded by: Simon Puterbaugh

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 Circuit Number: 1

Station: BG EW (CS-1) CS-2 (N) S Time: 0910

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.714

Lat/Northing: Long/Easting: Total Water Depth: 45.5

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.96	7.12	10.34	15.5
Middle	22.75	2.05	7.13	10.31	15.5
Deep	42.5	2.33	7.15	10.28	15.5

Comments: • No odor, sheen, discoloration, or suspended material observed

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) (N) S Time: 0918

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.827

Lat/Northing: 45.85024 Long/Easting: 122.75679 Total Water Depth: 47.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.36	7.13	10.34	15.5
Middle	23.8	2.50	7.14	10.31	15.5
Deep	49.6	3.32	7.16	10.29	15.5

Comments: • No sheen, odor, discoloration, or suspended material observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 2

Station: (BG) EW CS-1 CS-2 N (S) Time: 1030

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.254

Lat/Northing: 45.57874 Long/Easting: 122.75405 Total Water Depth: 40

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.55	7.19	10.34	15.5
Middle	20	3.01	7.20	10.32	15.5
Deep	37	3.56	7.17	10.31	15.4

Comments[1]: • No sheen, odor, discoloration, or suspended material observed

Construction Activity: ISS Drilling

Station: BG (EW) CS-1 CS-2 (N) S Time: 1055

Flood / (Ebb) Up River / ~~Down River~~ Avg. Velocity: 0.150

Lat/Northing: 45.58011 Long/Easting: 122.75691 Total Water Depth: 46.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.68	7.21	10.32	15.5
Middle	23.2	2.54	7.20	10.31	15.5
Deep	43.4	5.83	8.29	10.30	15.4

Comments[1]: • No sheen, odor, discoloration, or suspended material observed

Construction Activity: ISS Drilling

Recorded by: Simon Dutenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 2

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1106

Flood (Ebb) Up River / (Down River) **Avg. Velocity:** 0.180

Lat/Northing: 45.58035 Long/Easting: 122.75746 **Total Water Depth:** 45.3

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	3.16	7.22	10.33	15.5
Middle	22.65	2.62	7.21	10.31	15.5
Deep	42.3	4.02	7.95	10.32	15.4

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1114

Flood (Ebb) Up River (Down River) **Avg. Velocity:** 0.297

Lat/Northing: 45.58033 Long/Easting: 122.75676 **Total Water Depth:** 47.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.02	7.19	10.35	15.5
Middle	23.7	2.26	7.17	10.34	15.5
Deep	44.4	2.58	7.16	10.35	15.4

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Recorded by: Simon Pudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

*SS = Suspended solids/material

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 3

Station: (BG) EW CS-1 CS-2 N (S) **Time:** 1230

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.526

Lat/Northing: 45.57878 **Long/Easting:** 122.75406 **Total Water Depth:** 40

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.89	7.20	10.37	15.6
Middle	20	2.39	7.17	10.35	15.4
Deep	37	2.80	7.16	10.33	15.4

Comments[1]: No sheen, odor discoloration, or SS observed

Construction Activity: ISS Drilling

Station: BG (EW) CS-1 CS-2 (N) S **Time:** 1240

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.358

Lat/Northing: 45.58012 **Long/Easting:** 122.75689 **Total Water Depth:** 45.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.82	7.18	10.39	15.5
Middle	22.6	2.09	7.17	10.37	15.4
Deep	42.2	2.53	7.20	10.33	15.4

Comments[1]: No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/materials

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 3

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1247

Flood / (Ebb) Up River / (Down River) Avg. Velocity: ~~0.5D~~ 1.006

Lat/Northing: 45.58033 Long/Easting: 122.75748 Total Water Depth: 43.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.94	7.15	10.39	15.4
Middle	21.7	2.06	7.14	10.37	15.4
Deep	40.4	2.31	7.18	10.34	15.4

Comments[1]: No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1257

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.782

Lat/Northing: 45.58024 Long/Easting: 122.75667 Total Water Depth: 46.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.84	7.12	10.42	15.4
Middle	23.2	1.97	7.14	10.39	15.4
Deep	43.4	2.53	7.15	10.35	15.3

Comments[1]: No sheen, odor, discoloration, or ~~SS~~ SS* observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/materials

ANCHOR QEA

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Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023			**Circuit Number:** 4		
Station: (BG) EW CS-1 CS-2 (N) S				Time: 1430	
(Flood) / Ebb		Up River / Down River		Avg. Velocity: 0.460 SD	
Lat/Northing: 45.58037		Long/Easting: 122.75802		Total Water Depth: 41.6	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**D.O. (mg/L)**	**Temp. (°C)**
Surface	1	2.02	7.17	10.37	15.5
Middle	20.8	2.15	7.23	10.37	15.4
Deep	38.6	2.99	7.21	10.37	15.3
Comments[1]: No sheen, odor, discoloration, or SS observed					
Construction Activity: ISS Drilling					
Station: BG (EW) CS-1 CS-2 N S				Time: 1444	
(Flood) / Ebb		Up River / Down River		Avg. Velocity: 0.032 SD	
Lat/Northing: 45.57919		Long/Easting: 122.75500		Total Water Depth: 43	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**DO (mg/L)**	**Temp. (°C)**
Surface	1	1.75	7.29	10.36	15.5
Middle	21.5	1.86	7.25	10.38	15.4
Deep	40	2.90	7.21	10.38	15.3
Comments[1]: No sheen, odor, discoloration, or SS observed					
Construction Activity: ISS Drilling					
Recorded by: Simon Dudenhoefer					

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

ANCHOR QEA
6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #697D

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-16-2023 **Circuit Number:** 4

Station: BG EW (CS-1) CS-2 N S **Time:** 1452

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.035

Lat/Northing: 45.57893 **Long/Easting:** 122.75459 **Total Water Depth:** 39.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.78	7.24	10.41	15.4
Middle	19.7	2.14	7.21	10.42	15.3
Deep	36.4	3.25	7.18	10.39	15.3

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) N S **Time:** 1500

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.223

Lat/Northing: 45.57958 **Long/Easting:** 122.75493 **Total Water Depth:** 47.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.22	7.16	10.44	15.3
Middle	23.7	2.75	7.19	10.42	15.3
Deep	44.4	3.07	7.20	10.38	15.3

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI Pro DSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-17-2023 **Circuit Number:** 1

Station: (BG) EW CS-1 CS-2 N (S) Time: 0808

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.248

Lat/Northing: 45.57880 Long/Easting: 122.75406 Total Water Depth: 42.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.74	7.22	10.32	15.2
Middle	21.1	2.63	7.21	10.30	15.2
Deep	39.2	2.81	7.20	10.26	15.2

Comments[1]: • River has lots of floating plant debris: algae, wood → ↳ not related to construction
• No sheen, odor, discoloration, or SS observed • Collected chem sample @ all depth intervals

Construction Activity: Excavation / Debris removal

Station: BG (EW) CS-1 CS-2 (N) S Time: 0834

Flood (Ebb) Up River (Down River) Avg. Velocity: 0.534

Lat/Northing: 45.58010 Long/Easting: 122.75697 Total Water Depth: 45.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.45	7.21	10.33	15.2
Middle	22.7	2.72	7.19	10.29	15.2
Deep	42.4	7.31	7.61	10.22	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation / Debris removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = Suspended solids/material

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-17-2023 | Circuit Number: 1

Station: BG EW (CS-1) CS-2 (N) S | Time: 0842

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.112

Lat/Northing: 45.58031 | Long/Easting: 122.75743 | Total Water Depth: 45.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.48	7.20	10.33	15.2
Middle	22.6	2.37	7.20	10.29	15.2
Deep	42.2	6.96	7.50	10.22	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation / Debris removal

Station: BG EW CS-1 (CS-2) (N) S | Time: 0851

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.358

Lat/Northing: 45.58026 | Long/Easting: 122.75675 | Total Water Depth: 48

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.45	7.18	10.34	15.2
Middle	24	2.76	7.23	10.30	15.2
Deep	45	7.12	7.60	10.16	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collecting chemistry samples here @ each depth interval
↳ CS-2N had highest CS NTU (7.12) @ 45'

Construction Activity: Excavation / Debris removal

Recorded by: Simon Dutenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe # 21E103678 YSI Pro DSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-17-2023			**Circuit Number:** 2		
Station: (BG) EW CS-1 CS-2 N (S)				Time: 1008	
Flood (Ebb)		Up River / Down River		Avg. Velocity: 0.519	
Lat/Northing: 45.57880		Long/Easting: 122.75405		Total Water Depth: 42.2	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**D.O. (mg/L)**	**Temp. (°C)**
Surface	1	2.59	7.14	10.41	15.2
Middle	21.1	2.66	7.20	10.38	15.2
Deep	39.2	2.94	7.24	10.35	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collecting chemistry samples @ each depth interval

Construction Activity: Excavation / Debris removal

Station: BG (EW) CS-1 CS-2 (N) S				Time: 1035	
Flood / (Ebb)		Up River / Down River		Avg. Velocity: 0.548	
Lat/Northing: 45.58012		Long/Easting: 122.75693		Total Water Depth: 46.6	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**DO (mg/L)**	**Temp. (°C)**
Surface	1	2.61	7.15	10.39	15.2
Middle	23.3	2.75	7.16	10.37	15.2
Deep	43.6	4.12	7.29	10.34	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation / Debris removal

Recorded by: Simon Dutenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / materials

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Probe #21E103678 YSI ProDSS #6970

Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-17-2023 **Circuit Number:** 2

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1044

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.429

Lat/Northing: 45.58032 Long/Easting: 122.75750 Total Water Depth: 45.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.41	7.19	10.41	15.2
Middle	22.8	2.84	7.19	10.38	15.2
Deep	42.6	7.27	7.28	10.31	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collecting chemistry samples here @ each depth interval
↳ CS-1N had highest compliance station NTU

Construction Activity: Excavation / Debris removal

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1051

Flood / (Ebb) Up River / ~~Down River~~ Avg. Velocity: 0.413

Lat/Northing: 45.58020 Long/Easting: 122.75677 Total Water Depth: 47.5

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.34	7.24	10.42	15.2
Middle	23.75	2.63	7.18	10.39	15.2
Deep	44.5	5.52	7.49	10.29	15.2

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation / debris removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-17-2023 **Circuit Number:** 3

Station: (BG) EW CS-1 CS-2 (N) S **Time:** 1430

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.083

Lat/Northing: 45.85035 **Long/Easting:** 122.75807 **Total Water Depth:** 42

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.21	7.39	10.43	15.5
Middle	21	3.32	7.37	10.40	15.2
Deep	39	3.49	7.27	10.38	15.1

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected chemistry sample @ each depth interval

Construction Activity: Excavation/debris removal, ISS Drilling

Station: BG (EW) CS-1 CS-2 N (S) **Time:** 1453

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.183

Lat/Northing: 45.57911 **Long/Easting:** 122.75498 **Total Water Depth:** 39

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.97	7.41	10.43	15.7
Middle	19.5	3.23	7.29	10.41	15.1
Deep	36	3.53	7.26	10.38	15.1

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation/debris removal, ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-17-2023			**Circuit Number:** 3		
Station: BG EW (CS-1) CS-2 N S				Time: 1502	
(Flood) / Ebb		(Up River) / Down River		Avg. Velocity: 0.033	
Lat/Northing: 45.57884		Long/Easting: 122.75463		Total Water Depth: 29.6	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**D.O. (mg/L)**	**Temp. (°C)**
Surface	1	1.91	7.29	10.46	15.7
Middle	14.8	2.97	7.24	10.41	15.1
Deep	26.6	3.62	7.24	10.39	15.1

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Excavation / debris removal, ISS Drilling

Station: BG EW CS-1 (CS-2) N (S)				Time: 1511	
(Flood) / Ebb		Up River / Down River		Avg. Velocity: 0.102	
Lat/Northing: 45.57955		Long/Easting: 122.75490		Total Water Depth: 48.6	
	Water Depth (feet)	**Turbidity (NTU)**	**pH (-)**	**DO (mg/L)**	**Temp. (°C)**
Surface	1	1.88	7.35	10.44	15.7
Middle	24.3	3.05	7.26	10.42	15.1
Deep	45.6	4.10	7.25	10.39	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collecting chemistry samples here @ each depth interval
• CS-25 had highest compliance station NTU (4.10) = sample

Construction Activity: Excavation / debris removal, ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

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Date: 10-18-2023 **Circuit Number:** 1

Station: (BG) EW CS-1 CS-2 N (S) Time: 0846

Flood (Ebb) Up River / Down River Avg. Velocity: 0.040

Lat/Northing: 45.57878 Long/Easting: 122.75407 Total Water Depth: 43

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.05	7.18	10.51	15.0
Middle	21.5	2.17	7.20	10.47	15.0
Deep	40	2.40	7.21	10.43	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected sample @ each depth interval w/ Van Dorn sampler

Construction Activity: ISS Drilling

Station: BG (EW) CS-1 CS-2 (N) S Time: 0908

Flood / (Ebb) Up River / ~~Down River~~ Avg. Velocity: 0.400

Lat/Northing: 45.58018 Long/Easting: 122.75692 Total Water Depth: 47.9

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.00	7.17	10.49	15.0
Middle	23.95	2.13	7.18	10.46	15.0
Deep	44.9	2.25	7.19	10.43	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-18-2023 **Circuit Number:** 1

Station: BG EW (CS-1) CS-2 (N) S **Time:** 0919

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.278

Lat/Northing: 45.58031 Long/Easting: 122.75745 **Total Water Depth:** 46

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.01	7.19	10.50	15.0
Middle	23	2.13	7.18	10.47	15.0
Deep	43	2.22	7.21	10.44	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) (N) S **Time:** 0930

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.605

Lat/Northing: 45.58028 Long/Easting: 122.75673 **Total Water Depth:** 48.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.99	7.18	10.50	15.0
Middle	24.3	2.08	7.17	10.47	15.0
Deep	45.6	2.36	7.20	10.44	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected samples @ each depth interval – CS2N had highest compliance station turbidity (2.36 NTU) @ 45.6'

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.
* SS = suspended solids/material

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Date: 10-18-2023 **Circuit Number:** 2

Station: (BG) EW CS-1 CS-2 N (S) Time: 1046

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.747

Lat/Northing: 45.57878 Long/Easting: 122.75405 Total Water Depth: 43

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.14	7.13	10.53	15.0
Middle	21.5	2.62	7.11	10.49	15.0
Deep	40	2.90	7.13	10.46	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collecting sample @ each depth interval w/ Van Dorn sampler

Construction Activity: ISS Drilling

Station: BG (EW) CS-1 CS-2 (N) S Time: 1108

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.399

Lat/Northing: 45.58013 Long/Easting: 122.75699 Total Water Depth: 46.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.25	7.07	10.49	15.0
Middle	23.2	2.56	7.07	10.48	14.9
Deep	43.4	2.87	7.15	10.46	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-18-2023 **Circuit Number:** 2

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1118

Flood / (Ebb) Up River / Down River **Avg. Velocity:** 0.435

Lat/Northing: 45.58033 Long/Easting: 122.75750 **Total Water Depth:** ~~44.8~~

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.57	7.18	10.50	15.0
Middle	22.4	2.54	7.11	10.48	15.0
Deep	41.8	2.72	7.15	10.46	~~15.0~~ 14.9*

Comments[1]: • No sheen, odor, discoloration, or SS observed

*14.9

Construction Activity: ISS Drilling

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1126

Flood / (Ebb) Up River / Down River **Avg. Velocity:** 0.645

Lat/Northing: 45.58024 Long/Easting: 122.75672 **Total Water Depth:** 47.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.20	7.13	10.54	15.0
Middle	23.8	2.46	7.11	10.50	15.0
Deep	44.6	3.25	7.16	10.46	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

• Collecting samples here @ each depth interval → CS2N has highest CS NTU (3.25) @ 44.6'

Construction Activity: ISS Drilling

Recorded by: Simon Dusterhoeft

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-18-2023 **Circuit Number:** 3

Station: (BG) EW CS-1 CS-2 N (S) Time: 1246

Flood / (Ebb) Up River / Down River Avg. Velocity: 0.199

Lat/Northing: 45.75871 Long/Easting: 122.75405 Total Water Depth: 38.8

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	1.84	7.18	10.53	15.3
Middle	19.4	2.56	7.18	10.49	15.0
Deep	35.8	2.67	7.14	10.45	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected sample @ each depth interval w/ VanDorn sampler

Construction Activity: ISS Drilling, ~~Debris~~ Swell SD removal

Station: BG (EW) CS-1 CS-2 (N) S Time: 1314

Flood / (Ebb) Up River / ~~Down River~~ Avg. Velocity: 0.487

Lat/Northing: 45.58013 Long/Easting: 122.75695 Total Water Depth: 49.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.11	7.22	10.52	15.1
Middle	22.2	2.47	7.17	10.49	15.0
Deep	41.4	3.29	7.19	10.44	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling, ~~de~~ SD Swell removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

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Date: 10-18-2023 **Circuit Number:** 3

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1326

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.541

Lat/Northing: 45.58035 Long/Easting: 122.75751 Total Water Depth: 43.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.61	7.17	10.52	15.0
Middle	21.8	2.91	7.19	10.48	15.0
Deep	40.6	3.03	7.20	10.45	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: ISS Drilling / Shell removal

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1335

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.420

Lat/Northing: 45.58026 Long/Easting: 122.75676 Total Water Depth: 46

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.47	7.14	10.52	15.0
Middle	23	3.21	7.20	10.47	15.0
Deep	43	3.07	7.16	10.43	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected samples @ each depth interval (highest CS NTU)

Construction Activity: ISS Drilling / ~~debris~~ SD debris removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = Suspended solids / material

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Water Quality Monitoring Form – Field Parameters
Gasco Sediments Site ISS Pilot Study

Date: 10-14-2023 **Circuit Number:** 4

Station: BG EW CS-1 CS-2 (N) S **Time:** 1621

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.134

Lat/Northing: 45.58036 Long/Easting: 122.75792 **Total Water Depth:** 42.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.46	7.11	10.39	15.2
Middle	21.1	2.71	7.15	10.43	15.1
Deep	39.2	3.43	7.24	10.41	15.0

Comments[1]: • No odor, sheen, discoloration, or SS observed
• Collected sample @ each depth interval w/ VanDorn sampler

Construction Activity: ISS Drilling / Swell removal

Station: BG (EW) CS-1 CS-2 N (S) **Time:** 1643

(Flood) / Ebb Up River / (Down River) **Avg. Velocity:** 0.518

Lat/Northing: 45.57925 Long/Easting: 122.75487 **Total Water Depth:** 44.8

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	1.99	7.25	10.51	15.4
Middle	22.4	2.85	7.26	10.46	15.0
Deep	41.8	3.48	7.28	10.42	14.9

Comments[1]: • No odor, sheen, discoloration, or SS observed

Construction Activity: ISS Drilling / Swell removal

Recorded by: Simon Duterhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids

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Date: ~~10-18-2023~~ SD 10-18-2023 **Circuit Number:** 4

Station: BG EW (CS-1) CS-2 N (S) **Time:** 1649

(Flood) / Ebb | (Up River) / Down River | Avg. Velocity: 0.527

Lat/Northing: 45.57898 | Long/Easting: 122.75443 | Total Water Depth: 41.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.10	7.23	10.53	15.3
Middle	20.6	2.67	7.22	10.48	15.0
Deep	38.2	3.49	7.20	10.43	15.0

Comments[1]: • No sheen, odor, drs coloration, or SS observed

Construction Activity: ISS Drilling/Swell Removal

Station: BG EW CS-1 (CS-2) N (S) **Time:** 1656

(Flood) / Ebb | (Up River) / Down River | Avg. Velocity: 0.537

Lat/Northing: 45.57959 | Long/Easting: 122.75485 | Total Water Depth: 48

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.08	7.08	10.49	15.3
Middle	24	3.18	7.19	10.44	15.0
Deep	45	3.67	7.17	10.41	15.0

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected sample @ each depth interval due to CS-25 having highest CS turbidity reading @ 45' (3.67)

Construction Activity: ISS Drilling/Swell removal

Recorded by: Simon Dutenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = Suspended solids/material

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Date: 10-19-2023 **Circuit Number:** 1

Station: (BG) EW CS-1 CS-2 N (S) **Time:** 0845

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.036

Lat/Northing: 45.57874 **Long/Easting:** 122.75399 **Total Water Depth:** 40.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.42	6.88	10.57	14.9
Middle	20.2	2.99	6.93	10.49	14.9
Deep	37.4	3.08	6.98	10.46	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected sample @ each depth interval w/ Van Dorn sampler
↳ sample collected @ 37.4' is MS/MSD sample (x3 volume)

Construction Activity: Swell removal

Station: BG (EW) CS-1 CS-2 (N) S **Time:** 0916

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.005

Lat/Northing: 45.58006 **Long/Easting:** 122.75689 **Total Water Depth:** 45.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.34	7.09	10.50	14.9
Middle	22.6	2.45	7.06	10.42	14.9
Deep	42.2	2.35	7.08	10.39	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Swell removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids/material

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Date: 10-19-2023 **Circuit Number:** 1

Station: BG EW (CS-1) CS-2 (N) S **Time:** 0930

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.032

Lat/Northing: 45.58034 **Long/Easting:** 122.75750 **Total Water Depth:** 45

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.16	7.02	10.49	14.9
Middle	22.5	2.43	7.11	10.43	14.9
Deep	42	~~*2.82~~	7.10	10.38	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

*3.77

Construction Activity: Swell removal

Station: BG EW CS-1 (CS-2) (N) S **Time:** 0943

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.236

Lat/Northing: 45.58024 **Long/Easting:** 122.75678 **Total Water Depth:** 47.4

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.39	7.12	10.47	14.9
Middle	23.7	2.68	7.11	10.42	14.9
Deep	44.4	~~*3.96~~ SD	7.07	10.44	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed *4.58

• CS-2N has highest CS NTU @ 44.4 (~~3.96~~ 4.58 SD) → collected simple @ each depth interval w/ Van Dorn → collected field dup @ 44.4

Construction Activity: Swell removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

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Date: 10-19-2023 **Circuit Number:** 2

Station: (BG) EW CS-1 CS-2 N (S) Time: 1347

Flood (Ebb) Up River / Down River Avg. Velocity: 0.263

Lat/Northing: 45.57881 Long/Easting: 122.75405 Total Water Depth: 41.6

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.31	7.20	10.70	15.0
Middle	20.8	2.96	7.18	10.69	14.9
Deep	38.6	4.46	7.09	10.69	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed
• Collected sample @ each depth interval w/ Van Dorn sampler
• Collected QC Field Duplicate sample @ 38.6'

Construction Activity: Swell removal

Station: BG (EW) CS-1 CS-2 (N) S Time: 1408

Flood (Ebb) Up River (Down River) Avg. Velocity: 0.391

Lat/Northing: 45.58015 Long/Easting: 122.75692 Total Water Depth: 45.6 SP

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	3.10	7.20	10.70	14.9
Middle	22.8	4.32	7.26	10.68	14.9
Deep	42.8	5.64	7.25	10.66	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Swell removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

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Date: 10-19-2023 **Circuit Number:** 2

Station: BG EW (CS-1) CS-2 (N) S **Time:** 1419

Flood / (Ebb) Up River / Down River **Avg. Velocity:** 0.109

Lat/Northing: 45.58035 Long/Easting: 122.75739 **Total Water Depth:** 44.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	D.O. (mg/L)	Temp. (°C)
Surface	1	2.79	7.24	10.72	15.0
Middle	22.1	4.38	7.23	10.69	14.9
Deep	41.2	5.29	7.20	10.66	14.9

Comments[1]: • No sheen, odor, discoloration, or SS observed
• CS-1N has highest CS turbidity @ 41.2' (5.29)
↳ collected sample @ each depth interval, MS/MSD @ 41.2'

Construction Activity: Swell Removal

Station: BG EW CS-1 (CS-2) (N) S **Time:** 1427

Flood / (Ebb) Up River / ~~Down River~~ **Avg. Velocity:** ~~1.4~~ 0.419

Lat/Northing: 45.58023 Long/Easting: 122.75677 **Total Water Depth:** 45.2

	Water Depth (feet)	Turbidity (NTU)	pH (-)	DO (mg/L)	Temp. (°C)
Surface	1	2.37	7.22	10.71	15.1
Middle	22.6	3.81	7.20 ~~3~~ Sp	10.70	14.9
Deep	42.2	4.61	7.26	10.67	14.8

Comments[1]: • No sheen, odor, discoloration, or SS observed

Construction Activity: Swell Removal

Recorded by: Simon Dudenhoefer

1. Include observations of floating/suspended material, sheens, discoloration, and odors.

* SS = suspended solids / material

Attachment 4
Water Quality Sampling Forms – Chemical Parameters

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #1 - Ebb Tide - Excavation/Debris Removal

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57880	Long/Easting: 122.75406	
Total Water Depth: 42.2	Sample Depth: 1, 21.1, 39.2	
Sample ID: NWN-BG1S-231017 +0815 +0820 +0825	Date: 10-17-23	Time: 0815, 0820, 0825

Comments[1]: • Collected samples @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1'	0815	NWN-BG1S-2310170815
21.1	0829	NWN-BG1S-2310170820 (MS/MSD → x3 volume)
39.2	0825	NWN-BG1S-2310170825

Compliance Station ID: CS-2N

Lat/Northing: 45.58026	Long/Easting: 122.75675	
Total Water Depth: 48	Sample Depth: 1, 24, 45	
Sample ID: NWN-CS2N-231017 +0905 +0910 +0915	Date: 10-17-23	Time: 0905 - 0915

Comments[1]: • Collected sample @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	0905	NWN-CS2N-2310170905
24	0910	NWN-CS2N-2310170910
45	0915	NWN-CS2N-2310170915

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	125-mL Amber Poly	ASTM D4282	NaOH
~~Free Cyanide~~ SD	~~125-mL Amber Poly~~ SD		~~None~~ SD
PAHs	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and collected by Simon Dudenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #2 - Ebb Tide - Excavation/Debris Removal

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57880	Long/Easting: 122.75405	
Total Water Depth: 42.2	Sample Depth: 1, 21.1, 39.2	
Sample ID: NWN-BG1S-231017 + 1020 + 1025 + 1030	Date: 10-17-23	Time: 1020-1030

Comments[1]: • Collected sample @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1020	NWN-BG1S-2310171020
21.1	1025	NWN-BG1S-2310171025
39.2	1030	NWN-BG1S-2310171030

Compliance Station ID: CS-1N

Lat/Northing: 45.58032	Long/Easting: 122.75747	
Total Water Depth: 45.4	Sample Depth: 1, 22.7, 42.4	
Sample ID: NWN-CS1N-231017 + 1110 + 1115 + 1120	Date: 10-17-23	Time: 1110-1120

Comments[1]: • Collected sample @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1110	NWN-CS1N-2310171110
22.7	1115	NWN-CS1N-2310171115
42.4	1120	NWN-CS1N-2310171120

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	125-mL Amber Poly	ASTM D4282	NaOH
~~Free Cyanide~~	~~125-mL Amber Poly~~ SD		None
PAHs	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and collected by Simon Dudenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #3 - Flood Tide - Excavation/Debris Removal + ISS Drilling

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1N

Lat/Northing: 45.85035	Long/Easting: 122.75807	
Total Water Depth: 42	Sample Depth: 1, 21, 39	
Sample ID: NWN-BGIN-231017 +1440 +1445 +1450	Date: 10-17-23	Time: 1440-1450

Comments[1]: • Collected sample @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1440	NWN-BGIN-2310171440
21	1445	NWN-BGIN-2310171445
39	1450	NWN-BGIN-2310171450

Compliance Station ID: CS-2S

Lat/Northing: 45.57955	Long/Easting: 122.75490	
Total Water Depth: 48.6	Sample Depth: 1, 24.3, 45.6	
Sample ID: NWN-CS2S-231017 +1520 +1525 +1530	Date: 10-17-23	Time: 1520-1530

Comments[1]: • Collected sample @ each depth interval using Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1520	NWN-CS2S-2310171520
24.3	1525	NWN-CS2S-2310171525
45.6	1530	NWN-CS2S-2310171530

Analytical Suite

Analyte	Bottle	Method	Preservative
~~Free Cyanide~~	~~125-mL Amber Poly~~ ~~125-mL Amber Poly~~ SD	ASTM D4282	NaOH None
~~PAHs~~	~~2 X 125-mL Amber Glass~~	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and collected by Simon Dutenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #1 – E66 Tide – ISS Drilling

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57878	Long/Easting: 122.75407	
Total Water Depth: 43'	Sample Depth: 1, 21.5, 40	
Sample ID: NWN-BG1S-231018 + time	Date: 10-18-23	Time: 0850-0900

Comments[1]: • Samples collected @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	0850	NWN-BG1S-231018 0850
21.5	0855	NWN-BG1S-231018 0855
40	0900	NWN-BG1S-231018 0900

Compliance Station ID: CS-2N

Lat/Northing: 45.58028	Long/Easting: 122.75673	
Total Water Depth: 48.6	Sample Depth: 1, 24.3, 45.6	
Sample ID: NWN-CS2N-231018 +time	Date: 10-18-23	Time: 0945-0955

Comments[1]: • Sample collected @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	0945	NWN-CS2N-231018 0945
24.3	0950	NWN-CS2N-231018 0950
45.6	0955	NWN-CS2N-231018 0955

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	125-mL Amber Poly	ASTM D4282	NaOH
	125-mL Amber Poly SD		None
PAHs	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

* SS = suspended solids/material

Recorded + Collected by Simon Dudenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #2 - E66 Tite - ISS Drilling

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57878	Long/Easting: 122.75405	
Total Water Depth: 43	Sample Depth: 1, 21.5, 40	
Sample ID: NWN-BG1S-231018 +time	Date: 10-18-23	Time: 1050-1100

Comments[1]: • Sample collected @ each depth interval using VanDorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	1050	NWN-BG1S-231018 1050
21.5	1055	NWN-BG1S-231018 1055
40	1100	NWN-BG1S-231018 1100

Compliance Station ID: CS-2N

Lat/Northing: 45.58024	Long/Easting: 122.75672	
Total Water Depth: 47.6	Sample Depth: 1, 23.8, 44.6	
Sample ID: NWN-CS N-231018 +time	Date: 10-18-23	Time: 1135-1145

Comments[1]: • Sample collected @ each depth interval w/ VanDorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	1135	NWN-CS2N-231018 1135
23.8	1140	NWN-CS2N-231018 1140
44.6	1145	NWN-CS2N-231018 1145

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	~~125-mL Amber Poly~~ 20 ~~125-mL Amber Poly~~	ASTM D4282	NaOH None
PAHs	~~2 X 125-mL Amber Glass~~	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

* SS = suspended solids / material

Recorded + collected by Simon Dutenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #3 - E66 Tide - ISS Drilling / Swell SD / ~~Debris Removal~~

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57871	Long/Easting: 122.75405	
Total Water Depth: 38.8	Sample Depth: 1, 19.4, 35.8	
Sample ID: NWN-BG1S-231018+Time	Date: 10-18-23	Time: 1255-1305

Comments[1]: • Collected sample @ each depth interval using Van Dorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	1255	NWN-BG1S-231018 1255
19.4	1300	NWN-BG1S-231018 1300
35.8	1305	NWN-BG1S-231018 1305

Compliance Station ID: CS-2N

Lat/Northing: 45.58028	Long/Easting: 122.75676	
Total Water Depth: 46	Sample Depth: 1, 23, 43	
Sample ID: NWN-CS2N-231018+Time	Date: 10-18-23	Time: 1345-1355

Comments[1]: • Collected sample @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or SS observed

Depth	Time	Sample ID
1	1345	NWN-CS2N-231018 1345
23	1350	NWN-CS2N-231018 1350
43	1355	NWN-CS2N-231018 1355

Analytical Suite

Analyte	Bottle	Method	Preservative
~~Free Cyanide~~	125-mL Amber Poly ~~125-mL Amber Poly~~	ASTM D4282	NaOH None
~~PAHs~~	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

*SS = suspended solids / material

Recorded and collected by Simon Dutenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #4 – Flood Tide – ISS Drilling, Swell Removal

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1N

Lat/Northing: 45.58036	Long/Easting: 122.75792	
Total Water Depth: 42.2	Sample Depth: 1, 21.1, 39.2	
Sample ID: NWN-BGIN-231018+Time	Date: 10-18-23	Time: 1630-1640

Comments[1]: • Sample collected @ each depth interval using Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1630	NWN-BGIN-2310181630
21.1	1635	NWN-BGIN-2310181635
39.2	1640	NWN-BGIN-2310181640

Compliance Station ID: CS-2S

Lat/Northing: 45.57959	Long/Easting: 122.75485	
Total Water Depth: 48	Sample Depth: 1, 24, 45	
Sample ID: NWN-CS2S-231018+Time	Date: 10-18-23	Time: 1705-1715

Comments[1]: • Sample collected @ each depth interval w/ Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1705	NWN-CS2S-2310181705
24	1710	NWN-CS2S-2310181710
45	1715	NWN-CS2S-2310181715

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	125-mL Amber Poly ~~125-mL Amber Poly~~ SD	ASTM D4282	NaOH None
PAHs	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and collected by Simon Dudenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #2 - E66 Tide - Swell Removal

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57874	Long/Easting: 122.75399	
Total Water Depth: 40.4	Sample Depth: 1, 20.2, 37.4	
Sample ID: NWN-BG1S-231019+TIME	Date: 10-19-23	Time: 0900-0910

Comments[1]: • Sample collected @ each depth interval using VanDorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	0900	NWN-BG1S-2310190900
20.2	0905	NWN-BG1S-2310190905
37.4	0910	NWN-BG1S-2310190910 (MS/MSD)

Compliance Station ID: CS-2N

Lat/Northing: 45.58024	Long/Easting: 122.75678	
Total Water Depth: 47.4	Sample Depth: 1, 23.7, 44.4	
Sample ID: NWN-CS2N-231019+TIME	Date: 10-19-23	Time: 0955-1005

Comments[1]: • Sample collected @ each depth interval using VanDorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	0955	NWN-CS2N-2310190955
23.7	1000	NWN-CS2N-2310191000
44.4	1005	NWN-CS2N-2310191005 / NWN-CS2N-2310191005 (FieldDup)

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	125-mL Amber Poly	ASTM D4282	NaOH
	~~125-mL Amber Poly~~ SD		None
PAHs	2 X 125-mL Amber Glass	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and collected by Simon Dudenhoefer

ANCHOR QEA

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

Circuit #2 - Ebb Tide - Swell Removal

Water Quality Sampling Form – Chemical Parameters
Gasco Sediments Site ISS Pilot Study

Background Station ID: BG-1S

Lat/Northing: 45.57881	Long/Easting: 122.75405	
Total Water Depth: 41.6	Sample Depth: 1, 20.8, 38.6	
Sample ID: NWN-BG1S-231019+TIME	Date: 10-19-23	Time:

Comments[1]: • Collected sample @ each depth interval using Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1355	NWN-BG1S-231019 1355
20.8	1400	NWN-BG1S-231019 1400
38.6	1405	NWN-BG1S-231019 1405 / NWN-BG101S-231019 1405 (F

Compliance Station ID: CS-1N

Lat/Northing: 45.58037	Long/Easting: 122.75738	
Total Water Depth: 45	Sample Depth: 1, 22.5, 42	
Sample ID: NWN-CS1N-231019+TIME	Date: 10-19-23	Time: 1440-1450

Comments[1]: • Collected sample @ each depth interval using Van Dorn sampler
• No sheen, odor, discoloration, or suspended material observed

Depth	Time	Sample ID
1	1440	NWN-CS1N-231019 1440
22.5	1445	NWN-CS1N-231019 1445
42	1450	NWN-CS1N-231019 1450 (MS/MSD)

Analytical Suite

Analyte	Bottle	Method	Preservative
Free Cyanide	~~125-mL Amber Poly~~	ASTM D4282	NaOH
	~~125-mL Amber Poly~~ (D)		None
PAHs	2 X ~~125-mL Amber Glass~~	EPA 8270D SIM	None

1. Observations of floating/suspended material, sheens, discoloration, and /or odors will be recorded in the comments.

Recorded and Collected by Simon Dudenhoefer

Attachment 5
Water Quality Field Parameter Measurements

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
1	10/16/2023	8:30	Downriver	BG-1S	South	43.0	1	Surface	1.65	--	7.11	10.35	15.5	
							21.5	Middle	1.90	--	7.13	10.34	15.5	
							40.0	Deep	2.26	--	7.11	10.29	15.5	
		9:02		EW-1N	North	45	1	Surface	1.91	0.26	7.13	10.36	15.5	
							22.5	Middle	1.95	0.05	7.11	10.30	15.5	
							42	Deep	2.29	0.03	7.17	10.28	15.5	
		9:10		CS-1N	North	45.5	1	Surface	1.96	0.31	7.12	10.34	15.5	
							22.75	Middle	2.05	0.15	7.13	10.31	15.5	
							42.5	Deep	2.33	0.07	7.15	10.28	15.5	
		9:18		CS-2N	North	47.6	1	Surface	2.36	0.71	7.13	10.34	15.5	
							23.8	Middle	2.50	0.6	7.14	10.31	15.5	
							44.6	Deep	3.32	1.06	7.16	10.29	15.5	
2	10/16/2023	10:30	Downriver	BG-1S	South	40.0	1	Surface	2.55	--	7.19	10.34	15.5	
							20	Middle	3.01	--	7.20	10.32	15.5	
							37.0	Deep	3.56	--	7.17	10.31	15.4	
		10:55		EW-1N	North	46.4	1	Surface	2.68	0.13	7.21	10.32	15.5	
							23.2	Middle	2.54	-0.47	7.20	10.31	15.5	
							43.4	Deep	5.83	2.27	8.29	10.30	15.4	
		11:06		CS-1N	North	45.3	1	Surface	3.16	0.61	7.22	10.33	15.5	
							22.65	Middle	2.62	0.08	7.21	10.31	15.5	
							42.3	Deep	4.02	0.46	7.95	10.32	15.4	
		11:14		CS-2N	North	47.4	1	Surface	2.02	-0.53	7.19	10.35	15.5	
							23.7	Middle	2.26	-0.75	7.17	10.34	15.5	
							44.4	Deep	2.58	-0.98	7.16	10.35	15.4	

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
3	10/16/2023	12:30	Downriver	BG-1S	South	40.0	1	Surface	1.89	--	7.20	10.37	15.6	
							20	Middle	2.39	--	7.17	10.35	15.4	
							37.0	Deep	2.80	--	7.16	10.33	15.4	
		12:40		EW-1N	North	45.2	1	Surface	1.82	-0.07	7.18	10.39	15.5	
							22.6	Middle	2.09	-0.3	7.17	10.37	15.4	
							42.2	Deep	2.53	-0.27	7.20	10.33	15.4	
		12:47		CS-1N	North	43.4	1	Surface	1.94	0.05	7.15	10.39	15.4	
							21.7	Middle	2.06	-0.33	7.14	10.37	15.4	
							40.4	Deep	2.31	-0.49	7.18	10.34	15.4	
		12:57		CS-2N	North	46.4	1	Surface	1.84	-0.05	7.12	10.42	15.4	
							23.20	Middle	1.97	-0.42	7.14	10.39	15.4	
							43.4	Deep	2.53	-0.27	7.15	10.35	15.3	
4	10/16/2023	14:30	Upriver	BG-1N	North	41.6	1	Surface	2.02	--	7.17	10.37	15.5	
							20.8	Middle	2.15	--	7.23	10.37	15.4	
							38.6	Deep	2.99	--	7.21	10.37	15.3	
		14:44		EW-1S	South	43	1	Surface	1.75	-0.27	7.29	10.36	15.5	
							21.5	Middle	1.86	-0.29	7.25	10.38	15.4	
							40	Deep	2.90	-0.09	7.21	10.38	15.3	
		14:52		CS-1S	South	39.4	1	Surface	1.78	-0.24	7.24	10.41	15.4	
							19.7	Middle	2.14	-0.01	7.21	10.42	15.3	
							36.4	Deep	3.25	0.26	7.18	10.39	15.3	
		15:00		CS-2S	South	47.4	1	Surface	2.22	0.2	7.16	10.44	15.3	
							23.70	Middle	2.75	0.6	7.19	10.42	15.3	
							44.4	Deep	3.07	0.08	7.20	10.38	15.3	

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
1	10/17/2023	8:08	Downriver	BG-1S	South	42.2	1	Surface	2.74	--	7.22	10.32	15.2	X
							21.1	Middle	2.63	--	7.21	10.30	15.2	X
							39.2	Deep	2.81	--	7.20	10.26	15.2	X
		8:34		EW-1N	North	45.4	1	Surface	2.45	-0.29	7.21	10.33	15.2	
							22.7	Middle	2.72	0.09	7.19	10.29	15.2	
							42.4	Deep	7.31	4.5	7.61	10.22	15.2	
		8:42		CS-1N	North	45.2	1	Surface	2.48	-0.26	7.20	10.33	15.2	
							22.6	Middle	2.37	-0.26	7.20	10.29	15.2	
							42.2	Deep	6.96	4.15	7.50	10.22	15.2	
		8:51		CS-2N	North	48.0	1	Surface	2.45	-0.29	7.18	10.34	15.2	X
							24.0	Middle	2.76	0.13	7.23	10.30	15.2	X
							45.0	Deep	7.12	4.31	7.60	10.16	15.2	X
2	10/17/2023	10:08	Downriver	BG-1S	South	42.2	1	Surface	2.59	--	7.14	10.41	15.2	X
							21.1	Middle	2.66	--	7.20	10.38	15.2	X
							39.2	Deep	2.94	--	7.24	10.35	15.2	X
		10:35		EW-1N	North	46.6	1	Surface	2.61	0.02	7.15	10.39	15.2	
							23.3	Middle	2.75	0.09	7.16	10.37	15.2	
							43.6	Deep	4.12	1.18	7.29	10.34	15.2	
		10:44		CS-1N	North	45.6	1	Surface	2.41	-0.18	7.19	10.41	15.2	X
							22.8	Middle	2.84	0.18	7.19	10.38	15.2	X
							42.6	Deep	7.27	4.33	7.28	10.31	15.2	X
		10:51		CS-2N	North	47.5	1	Surface	2.34	-0.25	7.24	10.42	15.2	
							23.75	Middle	2.63	-0.03	7.18	10.39	15.2	
							44.5	Deep	5.52	2.58	7.49	10.29	15.2	

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
3	10/17/2023	14:30	Upriver	BG-1N	North	42.0	1	Surface	2.21	--	7.39	10.43	15.5	X
							21	Middle	3.32	--	7.37	10.40	15.2	X
							39.0	Deep	3.49	--	7.27	10.38	15.1	X
		14:53		EW-1S	South	39	1	Surface	1.97	-0.24	7.41	10.43	15.7	
							19.5	Middle	3.23	-0.09	7.29	10.41	15.1	
							36	Deep	3.53	0.04	7.26	10.38	15.1	
		15:02		CS-1S	South	29.6	1	Surface	1.91	-0.3	7.29	10.46	15.7	
							14.8	Middle	2.97	-0.35	7.24	10.41	15.1	
							26.6	Deep	3.62	0.13	7.24	10.39	15.1	
		15:11		CS-2S	South	48.6	1	Surface	1.88	-0.33	7.35	10.44	15.7	X
							24.30	Middle	3.05	-0.27	7.26	10.42	15.1	X
							45.6	Deep	4.10	0.61	7.25	10.39	15.0	X
1	10/18/2023	8:46	Downriver	BG-1S	South	43.0	1	Surface	2.05	--	7.18	10.51	15.0	X
							21.5	Middle	2.17	--	7.20	10.47	15.0	X
							40.0	Deep	2.40	--	7.21	10.43	15.0	X
		9:08		EW-1N	North	47.9	1	Surface	2.00	-0.05	7.17	10.49	15.0	
							23.95	Middle	2.13	-0.04	7.18	10.46	15.0	
							44.9	Deep	2.25	-0.15	7.19	10.43	15.0	
		9:19		CS-1N	North	46.0	1	Surface	2.01	-0.04	7.19	10.50	15.0	
							23	Middle	2.13	-0.04	7.15	10.47	15.0	
							43	Deep	2.22	-0.18	7.21	10.44	15.0	
		9:30		CS-2N	North	48.6	1	Surface	1.99	-0.06	7.18	10.50	15.0	X
							24.3	Middle	2.08	-0.09	7.17	10.47	15.0	X
							45.6	Deep	2.36	-0.04	7.20	10.44	15.0	X

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
2	10/18/2023	10:46	Downriver	BG-1S	South	43.0	1	Surface	2.14	--	7.13	10.53	15.0	X
							21.5	Middle	2.62	--	7.11	10.49	15.0	X
							40.0	Deep	2.90	--	7.13	10.46	14.9	X
		11:08		EW-1N	North	46.4	1	Surface	2.25	0.11	7.07	10.49	15.0	
							23.2	Middle	2.56	-0.06	7.07	10.48	14.9	
							43.4	Deep	2.87	-0.03	7.15	10.46	14.9	
		11:18		CS-1N	North	44.8	1	Surface	2.57	0.43	7.18	10.50	15.0	
							22.4	Middle	2.54	-0.08	7.11	10.48	15.0	
							41.8	Deep	2.72	-0.18	7.15	10.46	14.9	
		11:26		CS-2N	North	47.6	1	Surface	2.20	0.06	7.13	10.54	15.0	X
							23.8	Middle	2.46	-0.16	7.11	10.50	15.0	X
							44.6	Deep	3.25	0.35	7.16	10.46	14.9	X
3	10/18/2023	12:46	Downriver	BG-1S	South	38.8	1	Surface	1.84	--	7.18	10.53	15.3	X
							19.4	Middle	2.56	--	7.18	10.49	15.0	X
							35.8	Deep	2.67	--	7.14	10.45	15.0	X
		13:14		EW-1N	North	44.4	1	Surface	2.11	0.27	7.22	10.52	15.1	
							22.2	Middle	2.47	-0.09	7.17	10.49	15.0	
							41.4	Deep	3.29	0.62	7.19	10.44	14.9	
		13:26		CS-1N	North	43.6	1	Surface	2.61	0.77	7.17	10.52	15.0	
							21.8	Middle	2.91	0.35	7.19	10.48	15.0	
							40.6	Deep	3.03	0.36	7.20	10.45	14.9	
		13:35		CS-2N	North	46.0	1	Surface	2.47	0.63	7.14	10.52	15.0	X
							23.0	Middle	3.21	0.65	7.20	10.47	15.0	X
							43.0	Deep	3.07	0.4	7.16	10.43	15.0	X

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
4	10/18/2023	16:21	Upriver	BG-1S	South	42.2	1	Surface	2.46	--	7.11	10.39	15.2	X
							21.1	Middle	2.71	--	7.15	10.43	15.1	X
							39.2	Deep	3.43	--	7.24	10.41	15.0	X
		16:43		EW-1N	North	44.8	1	Surface	1.99	-0.47	7.25	10.51	15.4	
							22.4	Middle	2.85	0.14	7.26	10.46	15.0	
							41.8	Deep	3.48	0.05	7.28	10.42	14.9	
		16:49		CS-1N	North	41.2	1	Surface	2.10	-0.36	7.23	10.53	15.3	
							20.6	Middle	2.67	-0.04	7.22	10.48	15.0	
							38.2	Deep	3.49	0.06	7.20	10.43	15.0	
		16:56		CS-2N	North	48.0	1	Surface	2.08	-0.38	7.08	10.49	15.3	X
							24.0	Middle	3.18	0.47	7.19	10.44	15.0	X
							45.0	Deep	3.67	0.24	7.17	10.41	15.0	X
1	10/19/2023	8:45	Downriver	BG-1S	South	40.4	1	Surface	2.42	--	6.88	10.57	14.9	X
							20.2	Middle	2.99	--	6.93	10.49	14.9	X
							37.4	Deep	3.08	--	6.98	10.46	14.9	X
		9:16		EW-1N	North	45.2	1	Surface	2.34	-0.08	7.09	10.50	14.9	
							22.6	Middle	2.45	-0.54	7.06	10.42	14.9	
							42.2	Deep	2.35	-0.73	7.08	10.39	14.9	
		9:30		CS-1N	North	45.0	1	Surface	2.16	-0.26	7.02	10.49	14.9	
							22.5	Middle	2.43	-0.56	7.11	10.43	14.9	
							42	Deep	3.77	0.69	7.10	10.38	14.9	
		9:43		CS-2N	North	47.4	1	Surface	2.39	-0.03	7.12	10.47	14.9	X
							23.7	Middle	2.68	-0.31	7.11	10.42	14.9	X
							44.4	Deep	4.58	1.5	7.07	10.44	14.9	X

Water Quality Field Parameter Measurements
Gasco Sediments Site ISS Field Pilot Study

Circuit No.	Monitoring Date	Time	Flow Direction (Upriver/ Downriver)	Station	North/ South	Total Water Depth (feet)	Monitoring Depth (feet)	Depth Zone	Measured Turbidity (NTU)	Background Corrected Turbidity (NTU)[1]	pH	DO (mg/L)	Temperature (C°)	Chemistry Sample
2	10/19/2023	13:47	Downriver	BG-1S	South	41.6	1	Surface	2.31	--	7.20	10.70	15.0	X
							20.8	Middle	2.96	--	7.18	10.69	14.9	X
							38.6	Deep	4.46	--	7.09	10.69	14.9	X
		14:08		EW-1N	North	45.0	1	Surface	3.10	0.79	7.20	10.70	14.9	
							22.0	Middle	4.32	1.36	7.26	10.68	14.9	
							42.0	Deep	5.64	1.18	7.25	10.66	14.9	
		14:19		CS-1N	North	44.2	1	Surface	2.79	0.48	7.24	10.72	15.0	X
							22.1	Middle	4.38	1.42	7.23	10.69	14.9	X
							41.2	Deep	5.29	0.83	7.20	10.66	14.9	X
		14:27		CS-2N	North	45.2	1	Surface	2.37	0.06	7.22	10.71	15.1	
							22.6	Middle	3.81	0.85	7.20	10.70	14.9	
							42.2	Deep	4.61	0.15	7.26	10.67	14.8	

Notes:

--: not applicable

1. The background corrected turbidity is calculated by subtracting the measured turbidity at each of the non-background stations (i.e., EW, CS-1, and CS-2) from the background station.

BG: background

CS: compliance station

DO: dissolved oxygen

EW: early warning

mg/L: milligram per liter

NTU: nephelometric turbidity unit

Attachment 6
Water Quality Chemical Parameter Measurements

Water Quality Monitoring Chemical Results
Gasco Sediments Site ISS Field Pilot Study

			Excavation/Debris Removal																							
		Sample Date	10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023	
		Time	8:15		8:20		8:25		9:05		9:10		9:15		10:20		10:25		10:30		11:10		11:15		11:20	
		Location ID	BG-1S		BG-1S		BG-1S		CS-2N		CS-2N		CS-2N		BG-1S		BG-1S		BG-1S		CS-1N		CS-1N		CS-1N	
		Depth (feet)	1.0		21.1		39.2		1.0		24.0		45.0		1.0		21.1		39.2		1.0		22.7		42.4	
Analyte	Chronic WQC[1,2]	Acute WQC[1,2]																								
Polycyclic Aromatic Hydrocarbons (µg/L)																										
Benzo(a)anthracene	2.2	9.2	0.017	U	**0.017**	**J**	**0.023**	**J**	0.017	U	**0.089**		**0.138**		0.016	U	0.017	U	**0.019**	**J**	**0.161**		**0.048**		**5.4** [5]	
Benzo(a)pyrene	0.96	4	**0.017**	**J**	**0.021**	**J**	**0.035**		**0.018**	**J**	**0.125**		**0.188**		0.016	U	0.017	U	**0.024**	**J**	**0.221**		**0.065**		**7.9**	

Water Quality Monitoring Chemical Results
Gasco Sediments Site ISS Field Pilot Study

			ISS Mixing																																					
		Sample Date	10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/17/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023	
		Time	14:40		14:45		14:50		15:20		15:25		15:30		8:50		8:55		9:00		9:45		9:50		9:55		10:50		10:55		11:00		11:35		11:40		11:45			
		Location ID	BG-1N		BG-1N		BG-1N		CS-2S		CS-2S		CS-2S		BG-1S		BG-1S		BG-1S		CS-2N		CS-2N		CS-2N		BG-1S		BG-1S		BG-1S		CS-2N		CS-2N		CS-2N			
		Depth (feet)	1.0		21.0		39.0		1.0		24.3		45.6		1.0		21.5		40.0		1.0		24.3		45.6		1.0		21.5		40.0		1.0		23.8		44.6			
Analyte	Chronic WQC[1,2]	Acute WQC[1,2]																																						
Polycyclic Aromatic Hydrocarbons (µg/L)																																								
Benzo(a)anthracene	2.2	9.2	**0.043**		**0.019**	J	**0.029**	J	0.017	U	0.016	U	0.016	U	0.016	U	0.017	U	0.162	U	0.017	U	0.017	U	0.016	U	0.017	U	0.017	U	0.017	U	0.0164	U	0.017	U	0.0162	U		
Benzo(a)pyrene	0.96	4	**0.061**		**0.022**	J	**0.031**	J	0.017	U	0.016	U	0.016	U	0.016	U	0.017	U	0.162	U	0.017	U	0.017	U	0.016	U	0.017	U	0.017	U	0.017	U	0.0164	U	0.017	U	**0.0187**	J		

Water Quality Monitoring Chemical Results
Gasco Sediments Site ISS Field Pilot Study

			ISS Mixing/Swell Removal																									
		Sample Date	10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023		10/18/2023	
		Time	12:55		13:00		13:05		13:45		13:50		13:55		16:30		16:35		16:40		17:05		17:10		17:15			
		Location ID	BG-1S		BG-1S		BG-1S		CS-2N		CS-2N		CS-2N		BG-1N		BG-1N		BG-1N		CS-2S		CS-2S		CS-2S			
		Depth (feet)	1.0		19.4		35.8		1.0		23.0		43.0		1.0		21.1		39.2		1.0		21.0		45.0			
Analyte	Chronic WQC[1,2]	Acute WQC[1,2]																										
Polycyclic Aromatic Hydrocarbons (µg/L)																												
Benzo(a)anthracene	2.2	9.2	0.017	U	0.016	U	0.017	U	0.017	U	0.016	U	**0.043**		0.017	U	0.016	U	0.017	U	0.017	U	0.016	U	**0.043**			
Benzo(a)pyrene	0.96	4	0.017	U	0.016	U	0.017	U	0.017	U	0.016	U	**0.059**		0.017	U	0.016	U	0.017	U	0.017	U	0.016	U	**0.059**			

Water Quality Monitoring Chemical Results
Gasco Sediments Site ISS Field Pilot Study

Notes:

1. Acute criteria will be the compliance criteria for water quality monitoring during all Pilot Study activities because such activities are intermittent and ephemeral in nature. Chronic criteria will be used to evaluate the effectiveness of construction BMPs and the potential need for additional or enhanced BMPs but will not be used for compliance purposes.

2. Acute and chronic PAH criteria are from *Procedures for Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures* (EPA 2003).

3. The result for Benzo(a)pyrene was higher than the chronic water quality criterion at both the background and compliance stations on 10/3. The chronic criterion is based on a 4-day average concentration. The 2-day average (10/3 and 10/4) concentrations for both the background and compliance stations are below the chronic criterion.

4. The result for Benzo(a)anthracene was higher than the chronic water quality criterion at the compliance station during circuit 2 on 10/17 at the bottom depth. The chronic criterion is based on a 4-day average concentration. The 1-day average (on 10/17) concentration for the compliance stations were below the chronic criterion.

Detected concentration is greater than the acute water quality criteria

Detected concentration is greater than the chronic water quality criteria

Bold: Detected result

J: Estimated value

U: Compound analyzed but not detected above detection limit

µg/L: micrograms per liter

BMP: best management practice

ISS: in situ stabilization and solidification

WQC: water quality criteria

Reference:

EPA (U.S. Environmental Protection Agency), 2003. *Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic Organisms: PAH Mixtures.* Office of Research and Development. EPA 600-R-02-013. November 2003. Available at: https://clu-in.org/conf/tio/porewater1/resources/EPA-ESB-Procedures-PAH-mixtures.pdf.

Attachment 7
Moonpool Informational Measurements

ANCHOR QEA

Moon Pool Water Quality Field Parameters
Gasco Sediments Site ISS Field Pilot Study

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
* 1-1	9-23-23	7:34	PRE	13.6	9.6	7.25	19.5
1-2	9-25-23	7:15	PRE	12.	1	7.14	19.1
1-2	↓	7:17	↓	↓	6	7.10	19.1
1-2	↓	7:19	↓	↓	8	7.10	19.1
1-2	↓	9:45	POST	12	1	6.93	19.3
1-2	↓	9:47	↓	↓	6	7.23	19.3
1-2	↓	9:49	↓	↓	8	7.73	19.2
1-4	9-26-23	14:50	PRE	13	1	7.12	18.8
1-4	↓	14:52	↓	↓	6	7.31	18.4
1-4	↓	14:55	↓	↓	10	7.30	18.4
1-4	↓	18:30	POST	13	1	7.16	18.3
1-4	↓	18:32	↓	↓	5	7.54	18.3
1-4	↓	18:35	↓	↓	10	7.50	18.2
1-6	9-27-23	06:51	PRE	14	1	7.12	16.9
1-6	↓	06:53	↓	↓	7	7.23	16.2
1-6	↓	06:55	↓	↓	11	7.44	16.5
1-6	9-27-23	09:38	POST	~~14~~ 13	1	7.11	17.8
1-6	↓	09:40	↓	↓	7	7.24	17.5
1-6	↓	09:42	↓	↓	10	7.25	16.6
2-1	9-28-23	10:38	PRE	13	1	6.95	20.8
2-1	↓	10:41	↓	↓	6	7.16	21.

Notes:

*= Parameters collect @ beginning of mixing.

ANCHOR QEA

Moonpool Informational Measurements

Gasco Sediments Site ISS Field Pilot Study

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
2-1	9-28-23	10:43	PRE	13	10	7.37	21.
2-1	9-28-23	12:00	POST	13	1	7.04	19.8
2-1	↓	12:03	↓	↓	6	7.16	19.9
2-1	↓	12:06	↓	↓	10	7.51	19.5
2-6	9-29-23	07:45	PRE	14	1	7.03	17.
2-6	↓	07:47	↓	↓	7	7.36	16.2
2-6	↓	07:49	↓	↓	11	7.78	16.1
2-6	9-29-23	09:12	POST	14	1	7.20	16.7
2-6	↓	09:20	↓	↓	7	7.56	17.
2-6	↓	09:25	↓	↓	11	7.65	17.
3-1	10-2-2023	07:17	PRE	15	1	7.06	16.5
3-1	↓	07:19	↓	↓	7	7.27	15.5
3-1	↓	07:22	↓	↓	12	7.36	15.5
3-1	10-2-2023	08:10	POST	14.5	1	7.17	15.5
3-1	↓	08:12	↓	↓	6	7.47	15.5
3-1	↓	08:15	↓	↓	11	7.56	15.8
6-9	10-3-2023	~~06:17~~ 07:11	PRE	16	1	6.98	16.5
6-9	↓	07:14	↓	↓	6	7.22	16.2
6-9	↓	07:19	↓	↓	13	7.29	16.0
6-9	10-3-2023	08:01	MID[1]	16	1	7.26	16.0
6-9	↓	08:05	↓	↓	6	7.71	16.0

Notes:

1 = Measurements collected after drill rod retracted from sediment before final drill depth was achieved. Collected "Post" drilling/mixing measurements as well.

ANCHOR QEA

Moonpool Informational Measurements
Gasco Sediments Site ISS Field Pilot Study

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
6-9	10-3-2023	08:09	MID	16	13	7.72	16.0
6-9	10-3-2023	09:08	POST	17	1	7.26	15.6
6-9	↓	09:11	↓	17	7	7.58	15.6
6-9	↓	09:14	↓	17	14	7.64	15.8

Notes:

ANCHOR QEA

Moonpool Informational Measurements
Gasco Sediments Site ISS Field Pilot Study

6720 South Macadam Avenue, Suite 300
Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
7-9	10-4-2023	06:38	PRE	14	1	6.95	~~59~~ 15.4
7-9	↓	06:42	↓	↓	7	7.28	15.4
7-9	↓	06:45	↓	↓	11	7.46	15.5
7-9	10-4-2023	07:39	POST	14	1	7.64	15.1
7-9	↓	07:42	↓	↓	7	7.66	15.4
7-9	↓	07:46	↓	↓	11	7.61	15.5

Notes:

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Moonpool Informational Measurements
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6720 South Macadam Avenue, Suite 300
Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
~~BARGE MOVE~~ Column 8-1	10/9/23	07:35	Pre	14.5	1	7.09	16.3
Column 8-1	↓	07:38	Pre	14.5	7.25	7.33	16.2
Column 8-1	↓	07:41	Pre	14.5	11.5	7.40	16.2
Column 8-1	10/9/23	10:34	Pre	16.6	1	7.19	16.8
Column 8-1	↓	10:38	Pre	16.6	8.3	7.39	16.5
Column 8-1	↓	10:42	Pre	16.6	13.6	7.42	16.5
↓	10/9/23	12:23	Post	16.1	1'	7.10	16.9
↓	↓	12:25	Post	16.1	8.05'	7.45	16.7
↓	↓	12:27	Post	16.1	13.1'	7.42	~~16.6~~ 16.6
Column 8-2	10/10/2023	06:52	Pre	19.9	1'	7.05	15.3
↓	↓	06:58	Pre	19.9	10'	7.44	15.6
↓	↓	07:06	Pre	19.9	17'	7.49	15.6
Column 8-2	10/10/2023	10:21	Post	15.3	1'	7.05	15.4
↓	↓	10:25	Post	15.3	7.6'	7.66	15.6
↓	↓	10:29	Post	15.3	12.3'	7.73	15.8
Column 8-10	10/12/2023	15:58	Pre	19.5	1'	7.04	~~16~~ 17.7
↓	↓	16:01	Pre	19.5	9.75'	7.41	17.2
↓	↓	16:05	Pre	19.5	16.5'	7.43	17.0
Column 8-10	10/12/2023	18:22	Post	20.1	1'	7.52	16.9
↓	↓	18:25	Post	20.1	10.0'	8.02	16.9
↓	↓	18:29	Post	20.1	17.1'	8.27	16.9

Notes:

ANCHOR QEA

Moonpool Informational Measurements
Gasco Sediments Site ISS Field Pilot Study

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Portland, OR 97219

ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
Column 8-9	10-13-2023	0630	Pre	20.2	1'	7.16	15.1
↓	↓	0634	Pre	↓	10.1'	7.39	15.6
↓	↓	0640	Pre	↓	17.2'	7.35	15.3
Column 8-9	10-13-2023	0743	Post	19.0	1'	7.93	15.9
↓	↓	0747	Post	↓	9.5'	9.10	16.0
↓	↓	0752	Post	↓	16.0'	9.30	16.2
Column 6-11	10-14-2023	0711	Pre	18.2	1'	6.91	15.8
↓	↓	0715	Pre	↓	9.1'	7.34	16.0
↓	↓	0719	Pre	↓	15.2'	7.45	16.2
Column 6-11	10-14-2023	0831	Post	22.0'	1'	7.57	15.2
↓	↓	0834	Post	↓	11'	8.77	16.0
↓	↓	0838	Post	↓	19'	8.84	16.0

Notes:

Recheck calibration after post readings on 10-13-2023 → OK.

ANCHOR QEA

Moonpool Informational Measurements
Gasco Sediments Site ISS Field Pilot Study

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ISS Column Location	Date	Time	Pre-/Post-Measurement	Water Column Thickness (feet)	Measurement Depth (feet below surface)	pH	Temperature (°C)
Column 2-12	10-16-2023	07:16	Pre	15.7	1.0	7.15	~~15.6~~ 15.6
↓	↓	07:18	Pre	↓	7.8	7.34	~~15.5~~ 15.5
↓	↓	07:21	Pre	↓	12.7	7.35	15.6
Column 2-12	10-16-23	08:38	Post	15.7	1.0	7.33	15.5
↓	↓	08:42	Post	↓	7.8	7.62	15.5
↓	↓	08:47	Post	↓	12.7	7.68	15.6
Column 1-9	10-17-23	13:02	Pre	14.3	1.0	7.27	16.7
↓	↓	13:05	Pre	↓	7.1	7.41	15.8
↓	↓	13:07	Pre	↓	11.3	7.43	15.8
Column 1-9	10-17-2023	15:13	Post	14.1	1.0	7.52	16.6
↓	↓	15:17	Post	↓	7.0	8.12	16.2
↓	↓	15:20	Post	↓	13.1	9.07	16.0
Column 3-7	10-18-2023	06:52	Pre	16.0	1.0	6.93	13.9
↓	↓	06:57	Pre	↓	8.0	7.26	14.3
↓	↓	07:01	Pre	↓	13.0	7.29	14.3
Column 3-7	10-18-2023	08:41	Post	16.0	1.0	7.00	14.1
↓	↓	08:45	Post	↓	8.0	7.35	14.2
↓	↓	08:49	Post	↓	13.0	7.41	14.5

Notes: