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:** | September 26, 2023 |
| **Week of:** | September 18, 2023 | **Report No:** | 2 |

**Weekly Summary**

| Item | Approximate Production This Week | Approximate Total Cumulative Production | Approximate Task Percent Completion |
|---|---|---|---|
| Mobilization activities | NA | NA | 100% |
| Dolphin pile removal | 0 | 0 | 100% |
| Debris removal | 0 | 0 | 100% |
| ISS auguring | 1 column | 1 column | 2% |
| Swell material removal | 0 | 0 | 0% |

**Work Performed This Period**

Monday (9/18/2023)

Continued equipment setup including installation of gangway, batch plant, in situ stabilization and solidification (ISS) drill rig, ISS and swell material removal barge moon pools, and swell material removal barge. Conducted ISS material quality assurance/quality control (QA/QC) sample collection training. Prepared equipment and supplies for ISS material QA/QC sample collection.

Tuesday (9/19/2023)

Continued equipment setup including installation of batch plant, ISS drill rig, ISS and swell material removal barge moon pools, swell material removal barge, and grout lines to ISS barge. Conducted ISS material QA/QC sample collection training. Prepared equipment and supplies for ISS material QA/QC sample collection. Began debris removal.

Wednesday (9/20/2023)

Continued equipment setup including final adjustments to moonpool curtains and ISS drill rig and calibration of grout mixing station. Conducted ISS material QA/QC sample collection training. Prepared equipment and supplied for ISS material QA/QC sample collection. Completed debris removal.

Thursday (9/21/2023)

Continued equipment setup including calibration and trial run of batch plant, moving grout lines into position for ISS drill, and installation of ISS drill rig.

Friday (9/22/2023)

Conducted post-debris removal bathymetry survey. Moved ISS barge into location to execute ISS auguring on column n 1-1. Deployed moon pool around ISS drill rig. Work on flow meter on Bauer BG28H.

Saturday (9/23/2023)

Began ISS auguring operations and completed column 1-1. Performed ISS QA/QC sample collection. Installed additional containment booms on channelward portion of field pilot study area. Completed bathymetric survey in vicinity of first column.

**Water Quality Monitoring**

Monday (9/18/2023)

Performed visual inspection of river outside the outer containment barriers during continued equipment setup operations (no mudline disturbance), and no turbidity plumes, sheens, or odors were observed. 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 (9/19/2023)

Performed visual inspection of river outside the outer containment barriers during continued equipment setup operations and debris removal activities, and no turbidity plumes, sheens, or odors were observed. 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. A single round of water quality monitoring was performed during an ebb tide during debris removal activities, with field parameters and chemistry samples collected at background station NWN-BG1S and compliance station NWN-CS1N.

Wednesday (9/20/2023)

Performed visual inspection of river outside the outer containment barriers during continued equipment setup operations and debris removal activities, and no turbidity plumes, sheens, or odors were observed. 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. A single round of water quality monitoring was performed during a flood tide during debris removal activities, with field parameters and chemistry samples collected at background station NWN-BG1N and compliance station NWN-CS2S.

Thursday (9/21/2023)

Performed visual inspection of river outside the outer containment barriers during continued equipment setup operations (no mudline disturbance) and no turbidity plumes, sheens, or odors were observed. 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 (9/22/2023)

Performed visual inspection of river outside the outer containment barriers during continued equipment setup operations (no mudline disturbance), and no turbidity plumes, sheens, or odors were observed. 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.

Saturday (9/23/2023)

Performed visual inspection of river outside the outer containment barriers during ISS auguring, and no turbidity plumes, sheens, or odors observed. Two rounds of water quality monitoring were performed during ebb tides during ISS auguring activities with field parameters collected. In accordance with the U.S. Environmental Protection Agency's (EPA's) comments on the EPA-approved Work Plan, a pH sample was collected from the moon pool prior to initiation of ISS auguring and following completion of ISS auguring and prior to raising the moon pool curtain. Prior to ISS auguring activities, sheen was observed moving channelward toward gap between the downstream containment boom and ISS barge. This sheen was generated from a known ebullition area that is not associated with construction activities. Immediately upon identification, an additional length of sorbent boom was deployed to completely enclose the construction area and prevent sheen migration beyond the containment booms.

Findings

There were no exceedances of field or chemical water quality criteria during any monitoring events this week. A compilation of water quality daily field forms from the week (Attachments 1 through 4), tabulated field parameter data (Attachment 5), and received water quality chemical results during this weekly reporting period (Attachment 6) are attached.

| **Scheduled Construction Work This Week (Next Reporting Week)** |
|---|
| Continue ISS auguring operations, ISS QA/QC sample collection, and swell material surveying, removal, and tracking. |

| **Problems Encountered and Contingency Actions Implemented** |
|---|
| No problems encountered. |

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

# Photographs

**Photograph 1**

ISS barge and crane assembly with installed gangway to riverbank (9/18/2023).

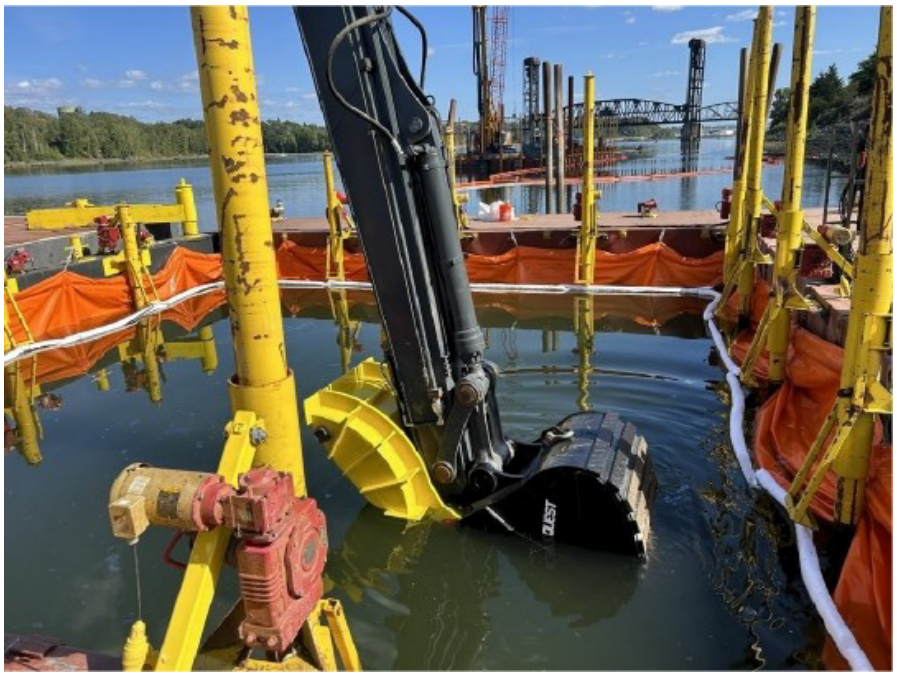
**Photograph 2**

Silt curtain installation on ISS barge moon pool (9/19/2023).

**Photograph 3**

Removed debris placed on barge (9/20/2023). No sediment removed during debris removal operations.

**Photograph 4**



Debris removal activity within moon pool (9/20/2023).

**Photograph 5**

Project layout with ISS and swell material barges and associated equipment and gangway installed (9/20/2023).

**Photograph 6**


ISS drill rig auger bit after completion of column location 1-1. Excess material washed into shown watertight containment bin (9/23/2023).

**Photograph 7**

Collecting ISS QA/QC samples from column 1-1 using discrete depth interval sampler (9/23/2023).

# Attachment 1
# Daily Monitoring Logs

# Daily Monitoring Log
## Gasco Site Remedial Action



ANCHOR QEA
Anchor QEA, LLC
6720 S Macadam Ave., Suite 300
Portland, OR 97219
Phone 503.670.1108

**DATE:** 9-19-23
**PERSONNEL:** Simon Dudenhoefer

**Wind from:** N | NE | E | SE | S | SW | (W) | NW | NONE | (LIGHT) | MEDIUM | HEAVY
(SUNNY) | CLOUDY | RAIN
**Temperature:** (°F) 57. °C [Circle appropriate units]

| TIME | COMMENTS |
|---|---|
| 0620 | Arrive on site - check in w/ Ben Uhl for work plan |
| 0655 | Calibrate YSI devices #5006 and #6970 |
| 0730 | Test YSI devices in river for calibration accuracy using |
| — | USGS Morrison Bridge River Gauge as reference. |
| — | Turbidity was not calibrated properly (reading -42.03 NTV) |
| — | on each device. |
| 0800 | Re-calibrate turbidity using DI water for 0 NTU |
| — | standard. |
| — | DI water provided accurate turbidity calibration for |
| — | both devices |
| 0900 | Test calibration accuracy in river, calibration accurate. |
| 0935 | Upload calibration log. |
| 0950 | Load extra gear onto WQM boat |
| 0955 | H/S meeting led by Ben Uhl + Eric Brown (Severson) |
| — | ↳ processing safety: staying clean, slips trips falls, lifting techniques, |
| — | keep workplace clean, eyewash station location |
| 1015 | Sample processing training w/ Eric Brown (Severson) |
| 1220 | Confirmed debris removal, mobilize for boat ramp. |
| 1240 | Arrive @ St Johns boat ramp |
| 1250 | Boat on water |
| 1303 | USGS Morrison Bridge Gauge: ~~discharge~~ SD - next low tide @ 1509 |
| — | ↳ ebb tide → Station #2 BG-1S |
| 1329 | @ BG-1S, confirmed distance from boom using range |
| — | finder. Distance = 291.6' |
| 1340 | Confirmed depth reading on Garmin EchoMap64CV with led line. |
| 1345 | Confirmed river direction w/ tide gauge, YSI swing direction, |
| — | and velocimeter = 0.5 Ft/sec |
| 1441 | Sediment disturbance start → Start WQM @ 1515 |
| 1525 | Unable to position @ EW-1N due to location of barges. |
| | - Collected WQM measurements ~75' from EW-1N on channel side of barges |

Signature:

# Daily Log 2 of 2

ANCHOR QEA

Anchor QEA, LLC
6720 S Macadam Ave., Suite 125
Portland, OR 97219
Phone 503.670.1108

**PROJECT NAME:** Gasco ISS WQM
**DATE:** 9-19-23
**SITE ADDRESS:** Willamette River - Gasco
**PERSONNEL:** Simon Dudenhoefer

**WEATHER:** **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 |
|---|---|
| 1554 | CS-1N GPS coordinates are in barge, unable to position |
| — | WQM boat @ coordinates. WQM for CS-1N occured |
| — | 75'NE of CS-1N, 150' from boom to maintain a |
| — | safe distance from barge and maintain proper |
| — | distance from boom. Coordinates 45.58022, -122.75724 |
| 1610 | CS-2N location accesible, were able to verify distance |
| — | from boom with range finder between 2 barges, distance |
| — | 49.3 yards. |
| 1617 | Finished Circuit 1 of WQM. No parameters surpassed their threshold. |
| — | Collecting water sample @ CS-1N @ deep (37.8') due to |
| — | highest turbidity reading of 6.07 NTU. |
| 1619 | Decontaminated Van Dorn sampler. |
| 1620 | Collected NWN-CS1N-230919 1620 @ CS-1N @ 37.7' |
| 1640 | Decontaminated Van Dorn Sampler |
| — | Collected NWN-BG1S-230919 1640 @ BG-1S @ 37' |
| 1654 | Arrive @ St. Johns boat ramp to load boat on trailer. |
| 1700 | Off water |
| 1715 | Back @ Gasco |

Signature:

# Daily Monitoring Log

## Gasco Sediment Site ISS Pilot Study

ANCHOR QEA

Anchor QEA, LLC
6720 S Macadam Ave., Suite 300
Portland, OR 97219

Phone 503.670.1108

DATE: 9-20-23

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 |
|---|---|
| 0605 | Arrive @ Gasco trailer, print field forms, discuss |
| — | work plan w/ Ben Uhl |
| 0645 | Calibrate YSI WQM probes |
| 0715 | Test calibration accuracy in river, compare results |
| — | between both YSI's to each other and USGS Morrison |
| — | Bridge gauge → results accurate. |
| 0750 | Upload YSI Cal. log to project folder. |
| 0815 | Mobilize to St. Johns boat ramp for WQM during debris removal |
| 0829 | SES Debris removal stast |
| 0835 | Boat on water. High tide @ 0910 (NOAA), verified |
| 0850 | river is @ flood tide w/ YSI, velocimeter, and USGS gauge. |
| 0905 | @ BG-1N, range finder distance to closest section |
| — | of catchers mitt boom is 96.6 yards = 289.8' |
| 0909 | verified Garmin depth reading w/ lead line (depth = 42.5') |
| 0936 | EW-1S in drill barge, found location close to EW-1S that is |
| — | 35 yards from boom (Lat: 45.57934 Long: 122.75490) |
| — | Started raining. |
| 0950 | @ CS-1S, unable to get closes to boom due to drill barge |
| — | & distance to boom 58 yards. |
| 1003 | CS-2S too close to boom, moved further into channel, |
| — | collected WQM measurements @ (45.57948, 122.75506) which |
| — | is 49.5 yards from boom. |
| 1011 | Decontaminated Van Dorn sampler to collect WS @ CS-2S |
| SD ~~1024~~ | ~~" WS @ BG-1N~~ |
| 1020 | Collected NWN-CS2S-230920 1020 @ 42' @ CS-2S |
| 1025 | Decontaminated Van Dorn sampler |
| 1035 | Collected NWN-BG1N-230920 1035 @ 38.6' @ BG-1N |
| 1040 | Mobilize to boat ramp |
| 1055 | Boat off water → Back to Gasco |
| 1140 | Upload field forms, data into EZEDP, and create COC, upload photos |

Signature: _____

# Daily Monitoring Log

## Gasco Sediment Site ISS Pilot Study

ANCHOR QEA

Anchor QEA, LLC
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Phone 503.670.1108

DATE: 9-22-23

PERSONNEL: Simon Dudenhoefer

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

Temperature: (°F) 50. °C [Circle appropriate units]

| TIME | COMMENTS |
|---|---|
| 0705 | Arrive @ Gasco trailer |
| 0720 | Health and safety meeting led by Ben Uhl. PPE, barge communication, |
| — | overhead heavy objects, pinch points, cat walk tripping hazards |
| — | 1 horn blast: moving equipment 2 horns: overhead hazards, |
| — | eye contact w/ operators, air monitoring during ISS sample processing. |
| 0730 | YSI calibration |
| 0800 | Prep WQM gear → load onto boat |
| 0845 | Test YSI cal. accuracy in river off of SES floating dock + compare |
| — | results to USGS Will. River Morrison gauge – Calibration accurate |
| ↳ | On water 0845 testing equipment/loading boat |
| 0900 | off water |
| 0938 | On water, prep for moon pool WQM prior to drilling. |
| 1155 | Collected pH and temp (C°) WQM parameter measurements |
| — | in drill barge work zone @ NW corner of pool prior |
| — | to drilling. |
| 1500 | No sediment disturbance work today, no WQM, off |
| — | water. |

Signature: _____

# Daily Monitoring Log

## Gasco Sediment Site ISS Pilot Study

ANCHOR QEA

Anchor QEA, LLC
6720 S Macadam Ave., Suite 300
Portland, OR 97219

Phone 503.670.1108

**DATE:** 9-23-23

**PERSONNEL:** Simon Pudenhoefer

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

SUNNY | (CLOUDY) | RAIN

**Temperature:** (°F) SS. °C [Circle appropriate units]

| TIME | COMMENTS |
|---|---|
| 0630 | Arrive on site – calibrate YSI probes |
| 0645 | H/S meeting: pinch points, professionalism, boat safety |
| 0702 | Load gear into truck – mobilize to floating dock/boat |
| 0730 | On water – drilling start |
| 0746 | River in ebb tide, next low @ 0916 (USGS), confirmed w/ swing of YSI and velocimeter |
| 0747 | @ BG-1S, 300' distance confirmed w/ range finder |
| — | Confirmed Garmin depth w/ lead line |
| 0750 | Begin WQM Circuit #1 @ BG-1S |
| 0807 | @ EW-1N, 300 foot distance confirmed w/ range finder |
| 0824 | CS-1N too close to boom, moved away into channel |
| — | to the east, confirmed 150' dist. to boom w/ range finder |
| 0842 | @ CS-2N, " " |
| 0856 | Finish WQM circuit #1, start #2 (Still Ebb tide) |
| 0902 | @ BG-1S, confirmed 300' Boom distance w/ range finder |
| 0926 | @ EW-1N, confirmed 100' " " |
| 0940 | @ CS-1N, confirmed 150' " " |
| 0950 | @ CS-2N, confirmed 150' " " |
| 1030 | off water – finish WQM |

Signature:

# Attachment 2
# Water Quality Monitoring Forms – Field Parameters

ANCHOR QEA

6720 S Macadam Ave., Suite 300
Portland, OR 98219

Probe # 21E103678 YSI ProDSS # 5006

# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-19-23 **Circuit Number:** 1

**Station:** (BG) EW CS-1 CS-2 N (S) Time: 1515

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.479

Lat/Northing: 45.57872 Long/Easting: 122.75383 Total Water Depth: 41.2

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 1.26 | 7.96 | 10.76 | 21.0 |
| Middle | 20.6 | 3.67 | 7.29 | 9.24 | 19.8 |
| Deep | 38.2 | 4.94 | 7.28 | 9.08 | 19.8 |

Comments[1]:
- No observations [1]

* No floating/suspended material, no sheens, no discoloration, and no odor. ⇒ collect chemistry sample @ this location (Deep Interval)

**Station:** BG (EW) CS-1 CS-2 (N) S Time: 1540

Flood / (Ebb) Up River / (Down River) Avg. Velocity: 0.06

Lat/Northing: 45.58011 Long/Easting: 122.75691 Total Water Depth: 42.6

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 1.83 | 7.65 | 10.24 | 20.5 |
| Middle | 21.3 | 2.21 | 7.35 | 9.39 | 19.9 |
| Deep | 39.6 | 3.97 | 7.29 | 9.11 | 19.8 |

Comments[1]:
- No observations [1]

* No floating/suspended material, no sheens, no discoloration, and no odor.

Recorded by: Simon Dudenhoefer

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

ANCHOR QEA

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Portland, OR 98219

Probe #21E103678 YSI ProDSS #5006

# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-19-23 | **Circuit Number:** 1

**Station:** BG EW (CS-1) CS-2 (N) S | Time: 1600

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.054

Lat/Northing: 45.58022 | Long/Easting: 122.75724 | Total Water Depth: 40.8

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.04 | 7.61 | 10.18 | 20.4 |
| Middle | 20.4 | 2.98 | 7.30 | 9.15 | 19.8 |
| Deep | 37.8 | 6.07 | 7.27 | 9.06 | 19.8 |

Comments[1]: • No observations [1]
* No floating/suspended material, no sheen, no discoloration, and no odor.
⇒ Collect chemistry sample @ this location (deep interval)

**Station:** BG EW CS-1 (CS-2) (N) S | Time: 1608

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.10

Lat/Northing: 45.58011 | Long/Easting: 122.75688 | Total Water Depth: 43

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 1.83 | 7.66 | 10.29 | 20.5 |
| Middle | 21.5 | 2.09 | 7.34 | 9.32 | 19.8 |
| Deep | 40 | 3.76 | 7.26 | 9.06 | 19.8 |

Comments[1]: • No observations [1]
* No floating/suspended material, no sheen, no discoloration, and no odor.

Recorded by: Simon Dudenhoefer

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

ANCHOR QEA

6720 S Macadam Ave., Suite 300
Portland, OR 98219

Probe #21E103678 YSI ProDss #5006

# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-20-23 **Circuit Number:** 1

**Station:** (BG) EW CS-1 CS-2 (N) S **Time:** 0929

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.093

Lat/Northing: 45.58035 Long/Easting: 122.75779 **Total Water Depth:** 42.5'

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.67 | 7.19 | 9.05 | 19.8 |
| Middle | 21.25 | 2.95 | 7.19 | 9.02 | 19.8 |
| Deep | 39.5 | 3.51 | 7.22 | 8.98 | 19.8 |

Comments[1]: • No sheen, odors, discoloration, or floating material observed
• Collecting water sample @ deep depth (39.5')

**Station:** BG (EW) CS-1 CS-2 N (S) **Time:** 0939

(Flood) / Ebb (Up River) / Down River **Avg. Velocity:** 0.071

Lat/Northing: 45.57934 Long/Easting: 122.75490 **Total Water Depth:** 45.5'

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.11 | 7.26 | 9.08 | 19.8 |
| Middle | 22.75 | 2.28 | 7.23 | 9.02 | 19.8 |
| Deep | 42.5 | 2.56 | 7.21 | 9.00 | 19.8 |

Comments[1]: • No sheen, odors, discoloration, or floating material observed

Recorded by: Simon Dudenhoefer

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

ANCHOR QEA

6720 S Macadam Ave., Suite 300
Portland, OR 98219

Probe #21E103678 YSI ProDss #5006

# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-20-23 **Circuit Number:** 1

**Station:** BG EW (CS-1) CS-2 N (S) Time: 0950

(Flood) / Ebb (Up River) / Down River Avg. Velocity: 0.051

Lat/Northing: 45.57891 Long/Easting: 122.75443 Total Water Depth: 35.5

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.11 | 7.25 | 9.09 | 19.8 |
| Middle | 17.75 | 1.98 | 7.22 | 9.04 | 19.8 |
| Deep | 32.5 | 2.37 | 7.22 | 9.03 | 19.8 |

Comments[1]: • No sheen, odors, discoloration or floating materials observed

**Station:** BG EW CS-1 (CS-2) N (S) Time: 1005

(Flood) / Ebb (Up River) / Down River Avg. Velocity: ~~[illegible]~~ 0.157

Lat/Northing: 45.57948 Long/Easting: 122.75506 Total Water Depth: 45

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.14 | 7.24 | 9.11 | 19.8 |
| Middle | 22.5 | 2.75 | 7.22 | 9.02 | 19.8 |
| Deep | 42 | 3.17 | 7.22 | 8.98 | 19.8 |

Comments[1]: • No sheen, odors, discoloration or floating materials observed • Collecting water sample here

* Highest turbidity of compliance stations @ 43' depth @ CS-2S

Recorded by: Simon Dudenhoefer

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

ANCHOR QEA

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# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-23-23 **Circuit Number:** 1

**Station:** (BG) EW CS-1 CS-2 N (S) **Time:** 0750

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.351

**Lat/Northing:** 45.57880 **Long/Easting:** 122.75405 **Total Water Depth:** 37

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.75 | 7.21 | 9.23 | 19.5 |
| Middle | 18.5 | 2.74 | 7.20 | 9.20 | 19.5 |
| Deep | 34 | 3.41 | 7.21 | 9.13 | 19.5 |

Comments[1]: • No sheen, odors, discoloration, or suspended materials observed

Construction Activity: ISS Drilling 1-1

**Station:** BG (EW) CS-1 CS-2 (N) S **Time:** 0811

Flood / (Ebb) Up River / (Down River) **Avg. Velocity:** 0.117

**Lat/Northing:** 45.58006 **Long/Easting:** 122.75689 **Total Water Depth:** 41

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.82 | 7.22 | 9.20 | 19.5 |
| Middle | 20.5 | 2.77 | 7.24 | 9.14 | 19.5 |
| Deep | 38 | 3.29 | 7.19 | 9.13 | 19.5 |

* Comments[1]: • Spotty sheen observed moving riverward from construction containment @ gap between downstream containment boom and ISS barge. HME deployed sorbent boom to enclose area and prevent sheen migration beyond construction area.

Construction Activity: ISS Drilling 1-1

Recorded by: Simon Dudenhoefer

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

* = This sheen was observed prior to active construction activities and sourced from a known ~~area~~ sheen generation area.

ANCHOR QEA

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# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-23-23 | **Circuit Number:** 1

**Station:** BG EW CS-1 CS-2 (N) S | Time: 0827

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.212

Lat/Northing: 45.58038 | Long/Easting: 122.75722 | Total Water Depth: 44

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.25 | 7.25 | 9.27 | 19.5 |
| Middle | 22 | 2.86 | 7.26 | 9.18 | 19.5 |
| Deep | 41 | 4.71 | 7.24 | 9.08 | 19.5 |

* Comments[1]: •Spotty sheen observed moving riverward from construction containment @ gap between downstream containment boom and ISS barge. HME deployed sorbent boom to enclose area and prevent sheen migration beyond construction area.

Construction Activity: ISS Drilling 1-1

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

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.161

Lat/Northing: 45.58028 | Long/Easting: 122.75671 | Total Water Depth: 44.2

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.18 | 7.26 | 9.29 | 19.5 |
| Middle | 22.1 | 2.49 | 7.25 | 9.20 | 19.5 |
| Deep | 41.2 | 4.56 | 7.23 | 9.12 | 19.5 |

* Comments[1]: •Spotty sheen observed moving riverward from construction containment @ gap between downstream containment boom and ISS barge. HME deployed sorbent boom to enclose area and prevent sheen migration beyond construction area.

Construction Activity: ISS Drilling 1-1

Recorded by: Simon Dudenhoefer

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

* = This sheen was observed prior to active construction activities and sourced from a known sheen generation area.

ANCHOR QEA

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# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-23-23 | **Circuit Number:** 2

**Station:** (BG) EW CS-1 CS-2 N (S) | Time: 0915

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.037

Lat/Northing: 45.57877 | Long/Easting: 122.75398 | Total Water Depth: 39.6

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.24 | 7.30 | 9.32 | 19.5 |
| Middle | 19.8 | 2.70 | 7.27 | 9.24 | 19.6 |
| Deep | 36.6 | 2.41 | 7.28 | 9.25 | 19.5 |

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

Construction Activity: ISS Drilling 1-1

**Station:** BG (EW) CS-1 CS-2 (N) S | Time: 0928

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.037

Lat/Northing: 45.58009 | Long/Easting: 122.75672 | Total Water Depth: 44

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.26 | 7.29 | 9.33 | 19.5 |
| Middle | 22 | 2.83 | 7.27 | 9.23 | 19.6 |
| Deep | 41 | 3.43 | 7.29 | 9.18 | 19.5 |

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

Construction Activity: ISS Drilling 1-1

Recorded by: Simon Dutenhoefer

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

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# Water Quality Monitoring Form - Field Parmeters
## Gasco Sediment Site ISS Pilot Study

**Date:** 9-23-23 | **Circuit Number:** 2

**Station:** BG EW ~~CS-1~~ CS-2 (N) S | Time: 0940

Flood / (Ebb) | Up River / (Down River) | Avg. Velocity: 0.054

Lat/Northing: 45.58020 | Long/Easting: 122.75740 | Total Water Depth: 39.5

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 2.21 | 7.27 | 9.29 | 19.5 |
| Middle | 19.75 | 2.33 | 7.27 | 9.24 | 19.5 |
| Deep | 36.5 | 2.98 | 7.25 | 9.12 | 19.5 |

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

Construction Activity: ISS Drilling 1-1

**Station:** BG EW ~~CS-1~~ CS-2 (N) S | Time: 0950

Flood / (Ebb) | Up River / ~~Down River~~ | Avg. Velocity: 0.077

Lat/Northing: 45.58018 | Long/Easting: 122.75662 | Total Water Depth: 43

| | Water Depth [feet] | Turbidity [NTU] | pH [-] | D.O. [mg/L] | Temp. [deg-C] |
|---|---|---|---|---|---|
| Surface | 1 | 1.95 | 7.28 | 9.34 | 19.5 |
| Middle | 21.5 | 2.52 | 7.28 | 9.26 | 19.5 |
| Deep | 40 | 3.14 | 7.24 | 9.16 | 19.5 |

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

Construction Activity: ISS Drilling 1-1

Recorded by: Simon Dudenhoefer

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

# Attachment 3
# Water Quality Sampling Forms – Chemical Parameters

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Portland, OR 98219

# Water Quality Sampling Form - Chemical Parameters
## Gasco Sediment Site ISS Pilot Study

| | | |
|---|---|---|
| **Background Station ID:** BG-1S | | |
| Lat/Northing: 45.57872 | Long/Easting: 122.75397 | |
| Total Water Depth: 40' | Sample Depth: 37' | |
| Sample ID: NWN-BG1S-230919 1640 | Date: 9-19-23 | Time: 1640 |
| Comments[1]: • Collected using Van Dorn sampler<br>• Collected x2 125 ml poly and x2 125 ml amber glass containers<br>• No observations [1]<br>* No floating/suspended material, no sheens, no discoloration, and no odor. | | |
| **Compliance Station ID:** CS-1N | | |
| Lat/Northing: 45.58019 | Long/Easting: 122.75723 | |
| Total Water Depth: 40.7' | Sample Depth: 37.7' | |
| Sample ID: NWN-CS1N-230919 1620 | Date: 9-19-23 | Time: 1620 |
| Comments[1]: • Collected using Van Dorn sampler<br>• Collected x2 125 ml amber poly and x2 125 ml amber glass containers<br>• No observations [1]<br>* No floating/suspended material, no sheens, no discoloration, and no odor. | | |

**Analytical Suite**

| Analyte | Bottle | Method | Preservative |
|---|---|---|---|
| Free Cyanide | 125-mL Amber Poly | ASTM D4282 | NaOH |
| | 125-mL Amber Poly | | |
| 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

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# Water Quality Sampling Form - Chemical Parameters
## Gasco Sediment Site ISS Pilot Study

| | | |
|---|---|---|
| **Background Station ID:** BG-1N | | |
| Lat/Northing: 45.58031 | Long/Easting: 122.75784 | |
| Total Water Depth: 41.6' | Sample Depth: 38.6' | |
| Sample ID: NWN-BG1N-230920103S | Date: 9-20-23 | Time: 1035 |
| Comments[1]: • Collected using Van Dorn sampler<br>• Collected x2 125ml amber poly and x2 125ml amber glass containers<br>• No sheen, odors, discoloration, or suspended materials observed | | |
| **Compliance Station ID:** CS-2S | | |
| Lat/Northing: 45.57948 | Long/Easting: 122.75506 | |
| Total Water Depth: 45' | Sample Depth: 42' | |
| Sample ID: NWN-CS2S-230920 1020 | Date: 9-20-23 | Time: 1020 |
| Comments[1]: • Collected using Van Dorn sampler<br>• Collected x2 125ml amber poly and x2 125 amber glass containers<br>• No sheen, odor, discoloration or suspected material observed | | |

**Analytical Suite**

| Analyte | Bottle | Method | Preservative |
|---|---|---|---|
| Free Cyanide | 125-mL Amber Poly | ASTM D4282 | NaOH |
| | 125-mL Amber Poly | | 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

# Attachment 4
# Water Quality Monitoring Calibration Log

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Portland, OR 98219

# Water Quality Parameter - Calibration Log Form
## Gasco Site Remedial Action

Date: 9-19-23
Probe S/N: 22G102376

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 | 3GG0021 | 07/25 | 7.26 | 7.06 | 11.0 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 4.27 | 4.00 | 11.0 | |
| Dissolved Oxygen (DO) | 100 % | NA | NA | 97.9 | 100.6 | 11.4 | |
| Turbidity (NTU) | 0 | NA | NA | 0.55 | 0.00 | 12.9 | DI WATER |
| Turbidity (NTU) | 124 | 23F24003-635 | 06/24 | 121.1 | 123.97 | 12.9 | |

Date: 9-19-23
Probe S/N: 21E103678

Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDSS #5006

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Calibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3GG0021 | 07/25 | 7.04 | 7.00 | 10.8 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 4.02 | 4.00 | 10.9 | |
| Dissolved Oxygen (DO) | 100 % | NA | NA | 98.7 | 100.7 | 10.8 | |
| Turbidity (NTU) | 0 | NA | NA | 0.23 | 0.00 | 15.8 | DI WATER |
| Turbidity (NTU) | 124 | 23F24003-635 | 06/24 | 118.01 | 124.0 | 15.8 | |

Notes:

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# Water Quality Monitoring - Calibration Log Form
## Gasco Sediment Site ISS Pilot Study

Date: 9-20-23
Probe S/N: 21E103678
Calibrated By: SIMON DUDENHOEFER
Meter(s) Model: YSI ProDSS #5006

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3660021 | 07/25 | 7.02 | 7.00 | 14.1 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 4.03 | 4.00 | 14.3 | |
| Dissolved Oxygen (DO)[1] | 100.3 | NA | NA | 101.8 | 100.3 | 14.4 | |
| Turbidity (NTU)[1] | 0 | NA | NA | 0.11 | 0.00 | 14.2 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F24003635 | 06/24 | 125.31 | 124.0 | 14.2 | |

Date: 9-20-23
Probe S/N: 22G102376
Calibrated By: SIMON DUDENHOEFER
Meter(s) Model: YSI ProDSS #6970

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3660021 | 07/25 | 6.82 | 6.99 | 14.3 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 3.77 | 4.00 | 14.6 | |
| Dissolved Oxygen (DO)[1] | 100.2 | NA | NA | 100.0 | 100.3 | 16.1 | |
| Turbidity (NTU)[1] | 0 | NA | NA | -0.13 | 0.00 | 14.4 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F24003635 | 06/24 | 121.13 | 123.91 | 14.4 | |

Notes:

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

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# Water Quality Monitoring - Calibration Log Form
## Gasco Sediment Site ISS Pilot Study

Date: 9-21-23
Probe S/N: 21E103678

Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDss #5006

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3GG0021 | 07/25 | 6.97 | 7.00 | 14.2 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 4.01 | 4.00 | 14.4 | |
| Dissolved Oxygen (DO)[1] | 100.4% | NA | NA | 100.0 | 100.4 | 18.1 | |
| Turbidity (NTU)[1] | 0 | NA | NA | 0.28 | 0.00 | 14.2 | DI WATER |
| Turbidity (NTU)[1] | 126 | 23F24003426 | 06/24 | 125.33 | 125.94 | 14.2 | |

Date: 9-21-23
Probe S/N: 22G102376

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

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3GG0021 | 07/25 | 7.16 | 7.00 | 14.6 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 4.10 | 4.00 | 15.0 | |
| Dissolved Oxygen (DO)[1] | 100.4% | NA | NA | 102.9 | 100.4 | 18.2 | |
| Turbidity (NTU)[1] | 0 | NA | NA | -0.02 | 0.00 | 14.9 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F24003635 | 06/24 | 125.50 | 124.08 | 14.9 | |

Notes:

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

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# Water Quality Monitoring - Calibration Log Form
## Gasco Sediment Site ISS Pilot Study

Date: 9-22-23
Probe S/N: 21E103678
Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDss #5006

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3GG0021 | 07/25 | 7.00 | 7.00 | 10.4 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 3.98 | 4.00 | 10.5 | |
| Dissolved Oxygen (DO)[1] | 100.2 | NA | NA | 100.3 | 100.2 | 14.5 | |
| Turbidity (NTU)[1] | 0 | NA | NA | -0.36 | 0.00 | 12.6 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F24003426 | 06/24 | 123.73 | 124.0 | 12.6 | |

Date: 9-22-23
Probe S/N: 22G102376
Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDss #6970

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3GG0021 | 07/25 | 6.99 | 7.00 | 10.8 | |
| pH 4.00 (Standard Units) | 4.00 | 3GF1085 | 06/25 | 3.97 | 4.00 | 11.0 | |
| Dissolved Oxygen (DO)[1] | 100.2 | NA | NA | 100.7 | 100.2 | 15.1 | |
| Turbidity (NTU)[1] | 0 | NA | NA | 0.08 | 0.00 | 12.6 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F24003426 | 06/24 | 124.13 | 124.0 | 12.6 | |

Notes:

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

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# Water Quality Monitoring - Calibration Log Form
## Gasco Sediment Site ISS Pilot Study

Date: 9-23-23
Probe S/N: 21E103678

Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDss #5006

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3660021 | 07/25 | 6.98 | 7.00 | 14.6 | |
| pH 4.00 (Standard Units) | 4.00 | 36F1085 | 06/25 | 3.99 | 4.00 | 14.8 | |
| Dissolved Oxygen (DO)[1] | 100.0 | NA | NA | 99.3 | 99.9 | 17.7 | |
| Turbidity (NTU)[1] | 0 | NA | NA | -0.12 | 0.00 | 15.7 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F2400 3426 | 06/24 | 125.52 | 124.08 | 15.7 | |

Date: 9-23-23
Probe S/N: 22G102376

Calibrated By: Simon Dudenhoefer
Meter(s) Model: YSI ProDss #6970

| Parameter | Calibration Standard | Standard Lot No. | Expiration Date | Initial Caibration | Final Calibration | Temperature | Comments |
|---|---|---|---|---|---|---|---|
| pH 7.00 (Standard Units) | 7.00 | 3660021 | 07/25 | 6.97 | 6.99 | 14.8 | |
| pH 4.00 (Standard Units) | 4.00 | 36F1085 | 06/25 | 3.98 | 4.00 | 15.0 | |
| Dissolved Oxygen (DO)[1] | 99.9 | NA | NA | 99.5 | 99.9 | 17.5 | |
| Turbidity (NTU)[1] | 0 | NA | NA | -0.10 | 0.00 | 16.1 | DI WATER |
| Turbidity (NTU)[1] | 124 | 23F2400 3426 | 06/24 | 129.45 | 123.96 | 16.1 | |

Notes:

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

YSI Pro DSS water quality meter #5006 used for field parameter collections

# 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 | 9/19/2023 | 15:15 | Downriver | BG | South | 41.2 | 1 | Surface | 1.26 | -- | 7.96 | 10.76 | 21.0 | |
| | | | | | | | 20.6 | Middle | 3.67 | -- | 7.29 | 9.24 | 19.8 | |
| | | | | | | | 38.2 | Deep | 4.94 | -- | 7.28 | 9.08 | 19.8 | X |
| | | 15:40 | | EW | North | 42.6 | 1 | Surface | 1.83 | 0.57 | 7.65 | 10.24 | 20.5 | |
| | | | | | | | 21.3 | Middle | 2.21 | -1.46 | 7.35 | 9.39 | 19.9 | |
| | | | | | | | 39.6 | Deep | 3.97 | -0.97 | 7.29 | 9.11 | 19.8 | |
| | | 16:00 | | CS-1 | North | 40.8 | 1 | Surface | 2.04 | 0.78 | 7.61 | 10.18 | 20.4 | |
| | | | | | | | 20.4 | Middle | 2.98 | -0.69 | 7.30 | 9.15 | 19.8 | |
| | | | | | | | 37.8 | Deep | 6.07 | 1.13 | 7.27 | 9.06 | 19.8 | X |
| | | 16:08 | | CS-2 | North | 43.0 | 1 | Surface | 1.83 | 0.57 | 7.66 | 10.29 | 20.5 | |
| | | | | | | | 21.5 | Middle | 2.09 | -1.58 | 7.34 | 9.32 | 19.8 | |
| | | | | | | | 40.0 | Deep | 3.76 | -1.18 | 7.26 | 9.06 | 19.8 | |
| 1 | 9/20/2023 | 9:29 | Upriver | BG | North | 42.5 | 1 | Surface | 2.67 | -- | 7.19 | 9.05 | 19.8 | |
| | | | | | | | 21.25 | Middle | 2.95 | -- | 7.19 | 9.02 | 19.8 | |
| | | | | | | | 39.5 | Deep | 3.51 | -- | 7.22 | 8.98 | 19.8 | X |
| | | 9:39 | | EW | South | 45.5 | 1 | Surface | 2.11 | -0.56 | 7.26 | 9.08 | 19.8 | |
| | | | | | | | 22.75 | Middle | 2.28 | -0.67 | 7.23 | 9.02 | 19.8 | |
| | | | | | | | 42.5 | Deep | 2.56 | -0.95 | 7.21 | 9.00 | 19.8 | |
| | | 9:50 | | CS-1 | South | 35.5 | 1 | Surface | 2.11 | -0.56 | 7.25 | 9.09 | 19.8 | |
| | | | | | | | 17.75 | Middle | 1.98 | -0.3 | 7.22 | 9.04 | 19.8 | |
| | | | | | | | 32.5 | Deep | 2.37 | -1.14 | 7.22 | 9.03 | 19.8 | |
| | | 10:05 | | CS-2 | South | 45.0 | 1 | Surface | 2.14 | -0.53 | 7.24 | 9.11 | 19.8 | |
| | | | | | | | 22.5 | Middle | 2.75 | 0.77 | 7.22 | 9.02 | 19.8 | |
| | | | | | | | 42.0 | Deep | 3.17 | -0.34 | 7.22 | 8.98 | 19.8 | X |
| 1 | 9/23/2023 | 7:50 | Downriver | BG | South | 37.0 | 1 | Surface | 2.75 | -- | 7.21 | 9.23 | 19.5 | |
| | | | | | | | 18.5 | Middle | 2.74 | -- | 7.20 | 9.2 | 19.5 | |
| | | | | | | | 34.0 | Deep | 3.41 | -- | 7.21 | 9.1 | 19.5 | |
| | | 8:11 | | EW | North | 41.0 | 1 | Surface | 2.82 | 0.07 | 7.22 | 9.20 | 19.5 | |
| | | | | | | | 20.5 | Middle | 2.77 | 0.03 | 7.24 | 9.14 | 19.5 | |
| | | | | | | | 38 | Deep | 3.29 | -0.12 | 7.19 | 9.13 | 19.5 | |
| | | 8:27 | | CS-1 | North | 44.0 | 1 | Surface | 2.25 | -0.5 | 7.25 | 9.27 | 19.5 | |
| | | | | | | | 22 | Middle | 2.86 | 0.12 | 7.26 | 9.18 | 19.5 | |
| | | | | | | | 41 | Deep | 4.71 | 1.3 | 7.24 | 9.08 | 19.5 | |
| | | 8:45 | | CS-2 | North | 44.2 | 1 | Surface | 2.18 | -0.57 | 7.26 | 9.29 | 19.5 | |
| | | | | | | | 22.1 | Middle | 2.49 | -0.25 | 7.25 | 9.20 | 19.5 | |
| | | | | | | | 41.2 | Deep | 4.56 | 1.15 | 7.23 | 9.12 | 19.5 | |
| 2 | 9/23/2023 | 9:15 | Downriver | BG | South | 39.6 | 1 | Surface | 2.24 | -- | 7.3 | 9.32 | 19.5 | |
| | | | | | | | 19.8 | Middle | 2.70 | -- | 7.27 | 9.24 | 19.6 | |
| | | | | | | | 36.6 | Deep | 2.41 | -- | 7.28 | 9.25 | 19.5 | |
| | | 9:28 | | EW | North | 44.0 | 1 | Surface | 2.26 | 0.02 | 7.29 | 9.33 | 19.5 | |
| | | | | | | | 22 | Middle | 2.83 | 0.13 | 7.27 | 9.23 | 19.5 | |
| | | | | | | | 41 | Deep | 3.43 | 1.02 | 7.29 | 9.18 | 19.5 | |
| | | 9:40 | | CS-1 | North | 39.5 | 1 | Surface | 2.21 | -0.03 | 7.27 | 9.29 | 19.5 | |
| | | | | | | | 19.75 | Middle | 2.33 | -0.37 | 7.27 | 9.24 | 19.5 | |
| | | | | | | | 36.5 | Deep | 2.98 | 0.57 | 7.25 | 9.12 | 19.5 | |
| | | 9:50 | | CS-2 | North | 43.0 | 1 | Surface | 1.95 | -0.29 | 7.28 | 9.34 | 19.5 | |
| | | | | | | | 21.5 | Middle | 2.52 | -0.18 | 7..28 | 9.26 | 19.5 | |
| | | | | | | | 40.0 | Deep | 3.14 | 0.73 | 7.24 | 9.16 | 19.5 | |

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 Monitoring Chemical Results

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

| | | | Debris Removal | | | |
|---|---|---|---|---|---|---|
| | | Sample Date | 9/19/2023 | 9/19/2023 | 9/20/2023 | 9/20/2023 |
| | | Location ID | BG-1S | CS-1N | BG-1N | CS-2S |
| | | Depth (feet) | 37.0 | 37.7 | 38.6 | 42.0 |
| **Analyte** | **WQC[1,2]** | **WQC[1,2]** | | | | |
| **Polycyclic Aromatic Hydrocarbons (µg/L)** | | | | | | |
| Benzo(a)anthracene | 2.2 | 9.2 | 0.019 U | 0.019 U | 0.016 U | 0.017 U |
| Benzo(a)pyrene | 0.96 | 4 | 0.019 U | 0.019 U | 0.016 U | 0.017 U |

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*

Detected concentration is greater than the acute water quality criteria

Detected concentration is greater than the chronic water quality criteria

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.