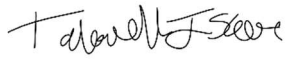



DATA VALIDATION CHECKLIST – STAGE 2A

| | | | |
|---|--|--|--|
| Site Name | Joint Base Pearl Harbor - Hickam | Project Name | Red-Hill-Incident |
| Data Reviewer (signature and date) |  Jan 22, 2022 | Technical Reviewer (signature and date) |  Jan 23, 2022 |
| Laboratory Report No. | 2112255 | Laboratory | Torrent Laboratory, Inc. - Milpitas, CA |
| Analyses | Per- and polyfluoroalkyl substances (PFAS) by Quality Systems Manual (QSM) 5.3 Table B-15 | | |
| Samples and Matrix | One groundwater sample (ERH2265/RHMW2254-01) | | |
| Field Duplicate Pairs | None | | |
| Field Blanks | None | | |

INTRODUCTION,

This checklist summarizes the Stage 2A validation performed on the subject laboratory report, in accordance with the U.S. Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *National Functional Guidelines (NFG) for Organic Superfund Methods Data Review* (November 2020).

OVERALL EVALUATION

No results were rejected or qualified for this data package. All results are usable as reported by the laboratory.

Data completeness:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| Y | |

Sample preservation, receipt, and holding times:

| Within Criteria | Exceedance/Notes |
|-----------------|--|
| N | All sample containers were received intact and with proper COC documentation. Cooler temperature and sample preservation (as applicable) were verified upon receipt of the samples. No custody seals were present on sample or shipping containers, but no qualifications were applied for this field oversight. |

DATA VALIDATION CHECKLIST – STAGE 2A

Method blanks:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| Y | |

Field blanks:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

System monitoring compounds (surrogates and labeled compounds):

| Within Criteria | Exceedance/Notes |
|-----------------|---|
| N | Extracted internal standard (EIS) analytes were not presented in the laboratory report. While no qualifications were applied the data user should note EIS analytes were not evaluated. |

MS/MSD:

| Within Criteria | Exceedance/Notes |
|-----------------|---|
| N | QSM 5.3 Table B-15 specifies one matrix spike and matrix spike duplicate (MS/MSD) to be analyzed per sample preparation batch. While no qualifications were applied, the data user should note the laboratory did not report any MS/MSD pair with the project sample. |

Laboratory duplicates:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

Field duplicates:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

DATA VALIDATION CHECKLIST – STAGE 2A

LCSs/LCSDs:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| Y | |

Sample dilutions:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------------------------|
| Y | The sample was analyzed undiluted. |

Re-extraction and reanalysis:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

MDLs/RLs:

| Within Criteria | Exceedance/Notes |
|-----------------|--|
| Y | Analytes detected between the MDL and RL were not present. The nondetect sample results are reported at the reporting limit (identified as PQL [project quantitation limit] in the laboratory report) and qualified nondetect (flagged U). |

Tentatively identified compounds:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

Other [None]:

| Within Criteria | Exceedance/Notes |
|-----------------|------------------|
| NA | |

DATA VALIDATION CHECKLIST – STAGE 2A

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

| | |
|----|---|
| J | The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample. |
| J+ | The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high. |
| J- | The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low. |
| NJ | The analysis indicates the presence of an analyte that has been “tentatively identified” and the associated value is the approximate concentration of the analyte in the sample. |
| R | The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample. |
| U | The analyte was analyzed for, but was not detected at or above the associated value (reporting limit). |
| UJ | The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria. |



Talaidh Isaacs 01/22/2022

SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/21/21, 11:00 am
Date Reported: 01/06/22

| | | | |
|-------------------------------|-----------------------|-----------------------|--------------|
| Client Sample ID: | ERH2265 / RHMW2254-01 | Lab Sample ID: | 2112255-001A |
| Project Name/Location: | HDOH Red Hill | Sample Matrix: | Water |
| Project Number: | 103S518817512 | | |
| Date/Time Sampled: | 12/20/21 / 10:15 | | |
| SDG: | | | |

| | |
|------------------------------------|---|
| Prep Method: PFAS-W-QSM 5.3 | Prep Batch Date/Time: 12/29/21 3:02:00PM |
| Prep Batch ID: 1138049 | Prep Analyst: TOMA |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|--|--------------------|----|------|--------|---------|---|-------|----------|-------|----|------------------|
| 4 2 FTS | QSM 5.3 Table B-15 | 1 | 2.74 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| 6 2 FTS | QSM 5.3 Table B-15 | 1 | 2.37 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| 8 2 FTS | QSM 5.3 Table B-15 | 1 | 3.09 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| 10:2 Fluorotelomer sulfonic acid | QSM 5.3 Table B-15 | 1 | 1.37 | 5.00 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorobutanoic acid | QSM 5.3 Table B-15 | 1 | 2.14 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluoropentanoic acid | QSM 5.3 Table B-15 | 1 | 1.40 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorobutane sulfonic acid | QSM 5.3 Table B-15 | 1 | 3.49 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorohexanoic acid | QSM 5.3 Table B-15 | 1 | 1.29 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluoropentane sulfonic acid | QSM 5.3 Table B-15 | 1 | 1.61 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluoroheptanoic acid | QSM 5.3 Table B-15 | 1 | 3.48 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorohexane sulfonic acid (PFHxS) | QSM 5.3 Table B-15 | 1 | 2.91 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorooctanoic acid | QSM 5.3 Table B-15 | 1 | 2.37 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorononanoic acid | QSM 5.3 Table B-15 | 1 | 4.71 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluoroheptane sulfonic acid (PFHpS) | QSM 5.3 Table B-15 | 1 | 2.75 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorooctane sulfonic acid | QSM 5.3 Table B-15 | 1 | 3.49 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorodecanoic acid | QSM 5.3 Table B-15 | 1 | 4.18 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorononane sulfonic acid (PFNS) | QSM 5.3 Table B-15 | 1 | 3.20 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| NMeFOSAA | QSM 5.3 Table B-15 | 1 | 2.41 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| NEtFOSAA | QSM 5.3 Table B-15 | 1 | 2.90 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluoroundecanoic acid | QSM 5.3 Table B-15 | 1 | 2.37 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorodecane sulfonic acid (PFDS) | QSM 5.3 Table B-15 | 1 | 1.66 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorododecanoic acid | QSM 5.3 Table B-15 | 1 | 1.79 | 5.00 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorotridecanoic acid | QSM 5.3 Table B-15 | 1 | 1.31 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorotetradecanoic acid | QSM 5.3 Table B-15 | 1 | 1.74 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |



SAMPLE RESULTS

Report prepared for: Yvonne Parry
Tetra Tech Inc (HI)

Date/Time Received: 12/21/21, 11:00 am
Date Reported: 01/06/22

| | | | |
|-------------------------------|-----------------------|-----------------------|--------------|
| Client Sample ID: | ERH2265 / RHMW2254-01 | Lab Sample ID: | 2112255-001A |
| Project Name/Location: | HDOH Red Hill | Sample Matrix: | Water |
| Project Number: | 103S518817512 | | |
| Date/Time Sampled: | 12/20/21 / 10:15 | | |
| SDG: | | | |

| | |
|------------------------------------|---|
| Prep Method: PFAS-W-QSM 5.3 | Prep Batch Date/Time: 12/29/21 3:02:00PM |
| Prep Batch ID: 1138049 | Prep Analyst: TOMA |

| Parameters: | Analysis Method | DF | MDL | PQL | Results | Q | Units | Analyzed | Time | By | Analytical Batch |
|----------------------------|--------------------|----|------|--------|---------|---|-------|----------|-------|----|------------------|
| Perfluorooctanesulfonamide | QSM 5.3 Table B-15 | 1 | 2.36 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorobutanesulfoamide | QSM 5.3 Table B-15 | 1 | 2.36 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Gen-X | QSM 5.3 Table B-15 | 1 | 3.95 | 15.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| ADONA | QSM 5.3 Table B-15 | 1 | 2.44 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| Perfluorohexanesulfoamide | QSM 5.3 Table B-15 | 1 | 4.50 | 10.0 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| 9-CI-PF3ONS | QSM 5.3 Table B-15 | 1 | 1.55 | 5.00 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |
| 11-CI-PF3OUdS | QSM 5.3 Table B-15 | 1 | 1.32 | 5.00 U | ND | | ng/L | 12/29/21 | 19:19 | MK | 462593 |