

**MONTHLY PROGRESS REPORT #314
FOR MAY 2023**

EPA REGION I ADMINISTRATIVE ORDERS SDWA 1-97-1019 and 1-2000-0014

**JOINT BASE CAPE COD (JBCC)
TRAINING RANGE AND IMPACT AREA**

The following summary of progress is for the period from 01 to 31 May 2023.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 26 May 2023:

Demolition Area 1 Comprehensive Groundwater RA

The Demolition Area 1 Comprehensive Groundwater RA consists of the removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. Extraction, treatment, and recharge (ETR) systems at Frank Perkins Road, Base Boundary, and the Leading Edge include extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and injection wells to return treated water to the aquifer.

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gallons per minute (gpm), with over 3.007 billion gallons of water treated and re-injected as of 26 May 2023. No Frank Perkins Road Treatment Facility shutdowns occurred in May.

The Base Boundary Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 gpm. As of 26 May 2023, over 367.2 million gallons of water were treated and re-injected. No Base Boundary MTU shutdowns occurred in May.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 26 May 2023, over 354.3 million gallons of water were treated and re-injected. No Leading Edge system shutdowns occurred in May.

The Pew Road MTU was turned off with regulatory approval on 08 March 2021 (formerly operated at a flow rate of 65 gpm). Over 672.9 million gallons of water were treated and re-injected during the RA.

J-2 Range Groundwater RA

Northern Plant

The J-2 Range Northern Treatment facility consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The Extraction, Treatment, and Re-infiltration system includes three extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration basin to return treated water to the aquifer.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 26 May 2023, over 2.086 billion gallons of water have been treated and re-injected. The following MTU E and F shutdowns occurred in May:

- 0840 on 02 May 2023 to replace a leaking ball valve on the ion exchange influent tank and was restarted at 0900 on 02 May 2023.

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 26 May 2023, over 1.598 billion gallons of water have been treated and re-injected. No Northern MTU G shutdowns occurred in May.

Eastern Plant

The J-2 Range Eastern Treatment facility consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETI system includes the following components: three extraction wells in an axial array, an ex-situ treatment process consisting of an ion exchange (IX) resin and granular activated carbon (GAC) media to treat perchlorate and explosives compounds, and three infiltration trenches located along the lateral boundaries of the plume where treated water enters the vadose zone and infiltrates into the aquifer. The J-2 Range Eastern system is running at a combined total flow rate of 495 gpm.

The MTUs H and I continue to operate at a flow rate of 250 gpm. As of 26 May 2023, over 1.726 billion gallons of water have been treated and re-injected. No MTU H and I shutdowns occurred in May.

MTU J continues to operate at a flow rate of 120 gpm. As of 26 May 2023, over 806.7 million gallons of water have been treated and re-injected. No MTU J shutdowns occurred in May.

MTU K continues to operate at a flow rate of 125 gpm. As of 26 May 2023, over 932.6 million gallons of water have been treated and re-injected. No MTU K shutdowns occurred in May.

J-3 Range Groundwater RA

The J-3 Range Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes four extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater and utilizes the existing Fuel Spill-12 (FS-12) infiltration gallery to return treated water to the aquifer.

The J-3 system is currently operating at a flow rate of 255 gpm. As of 26 May 2023, over 1.719 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdowns occurred in May:

- 2030 on 28 April 2023 due to a VFD fault at 90EW0001 and was restarted at 1005 on 01 May 2023.
- 1615 on 13 May 2023 due to a power interruption and was restarted at 0759 on 15 May 2023.
- 0850 on 15 May 2023 due to a power interruption and was restarted at 1120 on 16 May 2023.
- 0810 on 19 May 2023 to troubleshoot a communication problem at the well vault and to replace a faulty fiber optic media converter at 90EW0001 and was restarted at 1117 on 19 May 2023.

J-1 Range Groundwater RA

Southern Plant

The J-1 Range Southern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Southern MTU was turned off on 15 May 2023 to allow for installation of the new infiltration gallery. As of 26 May 2023, over 759.7 million gallons of water have been treated and re-injected. The J-1 Range Southern system remained off through the end of May 2023.

Northern Plant

The J-1 Range Northern Groundwater RA consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The ETR system includes two extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 26 May 2023, over 1.227 billion gallons of water have been treated and re-injected. No J-1 Range Northern MTU shutdowns occurred in May.

Central Impact Area RA

The Central Impact Area (CIA) Groundwater treatment facility consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETR system includes the following components: three extraction wells, an ex-situ treatment process consisting of an ion exchange resin and granular activated carbon media to treat explosives compounds, and three infiltration galleries to return treated water to the aquifer. The CIA systems 1, 2, and 3 continue to run at a combined total flow rate of 750 gpm. As of 26 May 2023, over 3.228 billion gallons of water have been treated and re-injected. No CIA system shutdowns occurred in May.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity as of 26 May 2023:

CIA

- Source Area investigations
 - Surface and vegetation clearance at P4A3
 - Quality control (QC) and quality assurance (QA) seeding in P4A3
 - EM61 survey in P4A3
 - MetalMapper cued surveys in P4A3
 - Intrusive investigations in P4A2 SU 6
 - Demo operations
 - Routine visual check of consolidated shot structure (CSS) soil cover and surface area around the perimeter of the CSS

Demolition Area 1

- Groundwater sampling within the Demolition Area 1 SPM
- Bag filters changed

Demolition Area 2

- Groundwater sampling within the Demolition Area 2 LTM

J-1 Range

- No activity

J-2 Range

- Drilling and groundwater profile sampling at J-2 Range North
- Boston Electric and Telephone Company (BETCo) added GFI outlet to EW0003 at Unit G to allow power access outside of well vault

J-3 Range

- No activity

L Range

- No activity

Small Arms Ranges

- No activity

Northwest Corner

- No activity

Training Areas

- No activity

Impact Area Roads

- No activity

Other

- Collected process water samples from Central Impact Area, Demolition Area 1, J-1 Range Northern, J-1 Range Southern, J-2 Range Eastern, J-2 Range Northern, and J-3 Range treatment systems
- Groundwater sampling for PFAS at CO-OP water supply well WS-2

JBCC Impact Area Groundwater Study Program (IAGWSP) Tech Update Meeting Minutes for 11 May 2023

Project and Fieldwork Update

USACE provided the project and fieldwork update starting with an update on the status of the groundwater sampling crews. USACE noted that Koman Government Solutions (KGS) crews completed the Demolition Area 2 long-term monitoring (LTM) sampling on 24 April. The crews

are currently performing Demolition Area 1 system performance monitoring (SPM) sampling, which consists of 107 well screens. SPM sampling started on 25 April and is estimated to be completed by the end of May. USACE said that after crews finish at Demolition Area 1, they will move on to J-1 South SPM semi-annual sampling.

USACE continued with a status of operations and maintenance activities. USACE noted that the May monthly process water samples were collected on 1 May 1 through 4 May, and results are pending. The J-3 Range treatment system quarterly PFAS sampling was performed on 13 April 13. USACE reminded the group that the J-1 South treatment system continues to run at a reduced flow rate of 50 gallons per minute (gpm) and that the infiltration trench replacement is scheduled for mid to late-May.

USACE continued with an update on the drilling activities for the new J-2 North wells.

- USACE explained that the drilling crew completed drilling at BH-736 on 25 April 25 and noted that bedrock was encountered at 370 feet below ground surface (bgs). The drilling crew collected 19 profile samples.
- Drilling at BH-737 was completed on 10 May, bedrock was encountered at 351 feet bgs, and 20 samples were collected.
- The crew will move to BH-738, which is located right off of Barlow Road.

EPA asked if a site visit could be conducted to the drilling sites if time permitted after today's consolidated shot observation in the Central Impact Area (CIA). IAGWSP replied that the USACE engineer was not available this afternoon, but IAGWSP would confer with the team and see if it would be possible. EPA asked for an estimate of when the results from BH-736 would be available for review. USACE noted they would have to check with the chemists to see when the results would be available. EPA asked if an email could be sent to the group with a tentative date when the data is expected. EPA noted the remedial project manager is off next week and wanted to prepare in the event that the results become available while they are out of the office.

MassDEP asked if BH-735 was located on Gibbs Road in between two wells where Massachusetts Maximum Contaminant Levels (MMCL) exceedances for PFAS6 were seen. USACE replied that it was and that the well is located between MW-345 on the east and MW-336 on the west. MassDEP noted that it was interesting that BH-735 was non-detect when both wells had exceedances of the MMCL on either side. MassDEP suggested that it would be good to resample the wells that had exceedances.

USACE explained that those wells had recently been sampled as part of the PFAS workplan. MassDEP said that it was good to have concurrent data to review. MassDEP asked if the results could be flagged and sent to the agencies via email as soon as they came in. EPA noted that a new remedial project manager would be assisting on some of the IAGWSP projects, specifically the J-1 North and J-1 South plumes. EPA asked for the tentative drilling dates for the J-1 south off-base well on Checkerberry Lane. USACE replied that it would be approximately six weeks before the drillers would start at that location.

USACE stated that Weston Solutions currently has an intrusive team working in SU6, which is Phase III, doing discreet digs and polygons. Weston has three geophysical teams in the new Phase IV, Area 3 grids. USACE explained that they have completed SU12, and they are working in SU13. Last week, the soil was removed from the Consolidated Shot Structure (CSS), and the liner was inspected. Minor repairs were made to the liner and the soil was returned to

the cell. USACE noted that this week the team is performing demolition operations. The responses to comments on the 2023 Quality Assurance Project Plan (QAPP) were provided to the agencies last week. EPA asked that the videos of demolition operations be posted as soon as they are available. USACE replied that they continue to post photos and videos to the JBCC Environmental Data Management System (EDMS) as they are completed.

J-1 Range Southern Data Presentation

USACE introduced the J-1 Range South data presentation. It was noted that during the reporting period (January 2022 to December 2022), there was no new subsurface investigatory work performed. USACE noted that the new J-1 Range Southern plume shell which was done in 2021 was used for the annual report. The J-1 Range Southern groundwater treatment system performance statistics were reviewed and discussed. USACE reminded the group that while there are two extraction wells associated with the system, only the off-base well is operating. During the reporting period, the treatment system was up about 81% of the time, which was primarily due to the recent problems at the infiltration gallery that occurred in the fall of 2022. There were no carbon breakthroughs or changeouts at J-1 Southern in 2022. USACE said that 50 million gallons of groundwater were treated and 0.04 pounds of RDX were removed during the reporting period. Graphs showing influent concentrations and contaminant mass removal were displayed and discussed.

USACE continued with a figure of the plume based on the fall 2022 chemistry results and highlighted the absence of any contours for RDX levels greater than 2 µg/L and noted that sitewide concentrations in 2022 were below 1 µg/L. The majority of the mass in the plume is located close to the base boundary. Sampling locations, groundwater monitoring results, and trends were reviewed and discussed.

USACE stated that the maximum RDX concentration in Zone 1 (source area to J1SEW0001) is 0.78 µg/L (MW-360M2) and explained that Zone 1 plumes reflect on-base RDX concentrations, with current mass less than 2 µg/L. The on-base plume has typically had annual maximum slightly above/below 2 µg/L, often driven by chemistry of MW-360M2. USACE said that currently the RDX plume above the risk-based concentration (RBC) is interpreted to be east of MW-528M1, west of MW-721M1, and between MW-131S/MW-360 and the base boundary. USACE noted that MW-720M2 concentration declined from 1.5 µg/L (Aug 2019) to non-detect (ND) (May 2022 and Oct 2022) near the base boundary along the longitudinal axis of the RDX on-base plume, supporting delineating bifurcation of the on-base mass 0.6 – 2 µg/L. In Zone 2 (J1SEW0001 to J1SEW0002), on Windsong Road MW-645, there was a decline from the 2021 sitewide maximum of 3.0 to 0.24 µg/L RDX, and west of MW-645, all wells were below 0.6 µg/L for the third year in a row.

USACE continued by noting that at MW-669M1 there is a fluctuating trend (0.26 J µg/l in May 2022 and 0.82 µg/l in Oct 2022), which is a decrease from Oct 2019 (1.7 µg/L); fluctuating slightly above/below RBC, but showing a declining trend. This likely reflects migration of higher concentrations from upgradient MW-647M1 in 2015–2018. At MW-647M1 there was a decrease to less than the reporting limit (RL) in both May/October 2022 vs. 3.5 µg/L in 2018. At MW-524M1, results were less than 6 µg/L in Oct 2013, less than 2 µg/L in 2017, less than 0.6 µg/L 2018, and were non-detect and below the reporting limit in May/October 2022, respectively. USACE explained that the eastern extent is constrained by all non-detects in 2022, the leading edge showed non-detect at MW-400M1/M2, non-detect to less than 0.6 µg/L at MW-402M1/M2

(Little Acorn Ln), non-detect at MW-403M1/M2 (Grand Oak) and non-detect at MW-525M1/M2, MW-526M1, MW-527M1 (Grandwood Drive). The western extent is constrained by non-detect to less than 0.6 µg/L at MW-481M1/M2 (Windsong Rd), MW-521M1, and MW-522M1/M2 (Ladyslipper Ln). Concentration trend plots were reviewed and discussed.

USACE reviewed the hydraulic monitoring and capture zone analysis. USACE said there was one synoptic water level round in October 2022 and noted hydraulic measurements were generally consistent with past results. Water levels from the top of the mound increased by approximately 0.01 to 0.76 feet from last year. The capture zones were developed manually and by model. The United States Geological Survey (USGS) top of mound well is trending lower to October 2022 after summer 2020 peak of approximately 74 ft mean sea level (June/July), which reflects annual precipitation trends and resulting aquifer recharge. The capture zone extent horizontally and vertically downgradient of J1SEW0002 is similar to Oct 2021. Most of plume is captured, except for a low concentration plumelet upgradient of Checkerberry Lane. USACE displayed figures with the model -predicted vs. observed capture zones at both the design rate of 125 gpm and the current pumping rate of 50 gpm.

Decision Document (DD) cleanup timelines were discussed. The DD timeline was based on the 2009 Plume Shell. The May 2011 DD cleanup timeline (< 0.6 µg/L) was 2024 but the September 2011 project note that located the leading-edge extraction well predicted 2032. Predictions based on the 2021 plume shell estimates that upgradient of J1SEW0001 will be less than 0.6 µg/L in 2029; and upgradient of J1SEW0002 will be below 0.6 µg/L in 2036, less than 2.0 was achieved in 2022. Downgradient of J1SEW0002 was below 2.0 µg/L in 2021 and is predicted to be less than 0.6 µg/L in 2035. USACE noted that the maximum downgradient migration of contamination is approximately 150 ft downgradient of Checkerberry Lane, and the plume never reaches Route 130.

IAGWSP recommends making no changes to the current treatment system operations or the chemical and hydraulic monitoring networks. The infiltration trench will be repaired, and the extraction rate will be restored from 50 gallons per minute (gpm) to 125 gpm. For Zone 1, new monitoring wells MW-720M1/M2 (base boundary), MW-721M1/M2 (eastern extent base boundary), and MW- 722M1/M2 (Greenway Road/Longitudinal Axis) should be added to both the chemical and hydraulic monitoring network.

The annual monitoring report will be submitted to the agencies for review shortly.

Action Items

USACE used the document tracking list to review and discuss deliverables.

JBCC Impact Area Groundwater Study Program (IAGWSP) Tech Update Meeting Minutes for 25 May 2023

Project and Fieldwork Update

USACE provided the project and fieldwork update starting with an update on the status of the groundwater sampling crews. USACE noted that KGS crews are currently performing Demolition Area 1 system performance monitoring (SPM) sampling, which consists of 107 well screens. SPM sampling started on 25 April and is estimated to be completed by the end of May. USACE said that after crews finish at Demolition Area 1, they will move on to J-1 South SPM

semi-annual sampling. USACE said the crews also sampled Upper Cape Water Supply Cooperative well #2 on 23 May, and results are pending.

USACE continued with a status of operations and maintenance activities. USACE noted that the May monthly process water samples were collected on 1 May through 4 May, and results are pending. USACE said there were no major treatment system shutdowns with the exception of J-1 South, which was shut off on 15 May to allow it to dry out before the infiltration gallery replacement, which will begin today, 25 May. It is anticipated that construction will be completed by the end of next week, and the system should be back up and running by the week after.

USACE continued with an update on the drilling activities for the new J-2 North wells. USACE explained that the drilling crew completed drilling at BH-738 and are starting with the 352 to 357 feet below ground surface (bgs) interval today. USACE noted the crew should be getting close to bedrock at this depth. They have collected 20 profile samples to date. EPA asked if that was generally the depth of bedrock. USACE replied that it was. EPA asked when results were anticipated from BH-737. USACE said it has been approximately a three week turn-around time for sample results so they should be coming in soon. USACE noted that a lot of the preliminary data was in the database but has not been validated.

USACE stated that Weston Solutions currently has a few teams out in the field including two metal mapper teams, both working in SU13. Weston has a digital geophysical mapping (DGM) team working in SU14 and have indicated they will be finished with DGM activities within the next week. Weston is performing digs in SU6, which is Phase III. Demolition operations of one white phosphorus item and five blow-in-place (BIP) are scheduled for next week. USACE explained that in early June there is annual military training, so crews will be de-mobbing for approximately 10 days and working around other training days throughout June. EPA asked how many days the teams would be unable to work during June and reminded the group that investigation takes precedent. USACE shared the range schedule and noted crews will be returning 12 June. The Environmental and Readiness Center (E&RC) noted that the Camp Edwards planning and training team works very closely with USACE to minimize any disruption to the ongoing investigative work.

PFAS Results Discussion

EPA stated that they asked for this agenda item because EPA wanted to hear what the team thought of the PFAS data that has been collected under the workplan. IAGWSP noted that to date, PFAS hits are being seen where they were detected previously, but there haven't been hits in the new locations, and to date there were not enough detections to define a plume. USACE showed a figure that highlighted where concentrations are in relation to existing well screens along a transect. EPA stated that even though detections aren't above any action levels, it would be nice to understand why they are there and where they are coming from to develop a better conceptual site model after the workplan is implemented.

USACE noted that, in past experiences investigating PFAS, the plumes tend to be very narrow and that, coupled with the geology at JBCC, makes defining PFAS plumes different than what is typically seen with perchlorate. ARNG interjected to remind the group that there were no firefighting training sites identified upgradient of this area, and there was not currently enough data to define a plume. ARNG said we will continue the sampling program, determine screens

for the new wells, and do due diligence around these sporadic detections but reiterated that there is no evidence of a plume.

USACE reminded the group that there are three extraction wells upgradient of Wood Road and everything that is flowing from a source in this area would be in the capture zone. EPA agreed that was true if the source area for the PFAS is the same as what generated the perchlorate plume. EPA noted that we do not know where the PFAS originated from or why it is there. ARNG noted that this is the IAGWSP's highest priority site, and the current assumption is that whatever activity might have happened to cause the PFAS contamination, it happened in conjunction with – near or at the same time – as other contamination, and therefore, has been comingled. ARNG said that in reviewing the Archives Search Report and the Preliminary Assessment performed by the National Guard, no evidence of another release has been found. ARNG said that fortunately our current treatment train appears to be successful in removing PFAS and it probably has been removing it the entire time it has been operating.

IAGWSP said the figure that USACE was reviewing was still in internal review and IAGWSP would rather wait until it had been fully populated with the new data before sharing with the agencies. EPA noted that they found the information and presentation helpful. USACE noted that there would be an opportunity to review it again when the screen-setting call is held. The call is tentatively scheduled for next Friday morning (2 June 2023). USACE noted that supporting information would be forwarded to the agencies before the call.

J-1 Range Northern Data Presentation

IAGWSP introduced the J-1 Range Northern data presentation. IAGWSP noted that during the reporting period (January 2022 to December 2022), the in-plume extraction well J1NEW0002 was redeveloped. The redevelopment had been a recommendation in the 2021 Environmental Monitoring Report. IAGWSP explained that J1NEW0002 had operated continually since January of 2014 without any redevelopment or cleaning. IAGWSP reminded the group that when the well was constructed in Fall 2013, it was clogged with drilling mud, requiring initial redevelopment. The redevelopment maintains well screen transmission efficiency along the entire screen length intersecting plumes to optimize plume capture within Zone 1. IAGWSP explained that there was approximately one week of downtime during cleaning, which might have enhanced plume migration at the downgradient stagnation zone. There were declining chemical trends seen at MW-370M1, which accelerated post-redevelopment.

IAGWSP continued with the J-1 Northern extraction treatment and reinjection system performance statistics. During the reporting period, the treatment system was up about 98% of the time. There was one breakthrough of RDX in January 2022 resulting in a carbon changeout. There were no carbon breakthroughs or changeouts for perchlorate during the reporting period. IAGWSP said that during the reporting period, 130 million gallons of groundwater were treated, and 0.14 pounds of RDX and 0.73 pounds of perchlorate were removed. Graphs showing influent concentrations and contaminant mass removal were displayed and discussed.

IAGWSP continued with groundwater monitoring results and trends. IAGWSP noted that in Zone 1, which is the area upgradient of J1NEW0002, for perchlorate there was a slight decline from 2021 in mid-plume MW-346M1 (15.0 µg/L, Dec 2022). This was the plume-wide maximum and the only well greater than 15 µg/L (EPA health advisory [HA]) in 2022. IAGWSP noted there was an increasing trend at depth in downgradient well MW-265M1 (7.8 µg/L, Nov 2022) and a

declining trend in shallower MW- 265M2 (5.7 µg/L, Nov 2022). There is a continued Massachusetts Maximum Contaminant Level (MMCL) exceedance at depth in mid-plume MW-326M1 (2.3 µg/L, Dec 2022), and concentrations remain elevated downgradient at MW-245M2 (12.0/11.0 ug/L in July/Nov 2022, respectively) but less than the HA since 2018. IAGWSP said there is a slight rising trend less than the MMCL at depth in MW-245M1 (1.8 µg/L, Nov 2022).

IAGWSP continued with trends for Zone 2, which is the area from J1NEW0002 to J1NEW0001. For perchlorate, there is a continued trend of concentrations less than 0.35 µg/L in the trailing edge (MW-370M2). The deep screen at MW-370M1, which has been elevated since system startup, declined to 4.2 µg/L in November 2022, which is the maximum perchlorate in Zone 2 in 2022. The mid-plume wells to the east are declining to less than 2 µg/L (MW-564M1 – 0.68 µg/L Nov 2022; MW-566M1 – 1.0/0.69 µg/L in June/Nov 2022, respectively); and the mid-plume wells to the west remain above 2 µg/L (3.1 µg/L MW-549M1), with a rising trend in MW-547M1 (3.9 µg/L Nov 2022). At the leading edge, MW-584M1 is less than the MMCL (1.8/1.6 µg/L in July/Nov 2022, respectively); and MW-590M2 (1.7/1.3 µg/L in July/Nov 2022, respectively) has been declining since a high of 7.6 µg/L in 2018. Figures with perchlorate trend plots were reviewed and discussed.

IAGWSP continued with results and trends for RDX. IAGWSP noted that in Zone 1, there is a long-term declining trend in trailing edge well at MW-303M2 (5.2/3.9 µg/L July/Dec 2022, respectively) greater than the HA since 2010. There is also a long-term rising trend downgradient at mid-plume at MW-346M1 (12.0 µg/L Nov 2022), which has been greater than the HA since 2012. The maximum RDX plume wide is at MW-245M2 (21.0/19.0 µg/L in July/Nov 2022, respectively). At the deeper well screen, MW-245M1, concentrations are above risk-based concentration (RBC) for the first time (0.78 µg/L, Nov 2022).

IAGWSP reviewed RDX trends for Zone 2 noting there were no detections greater than the RBC in 2022. Since 2014, there have been continued non-detect concentrations in the trailing edge at MW-370M2. For the 3rd consecutive year, concentrations were less than the HA and the first sample lower than the RBC since 2011 was taken in mid-plume MW-564M1 (0.51 µg/L in Nov 2022). This was the maximum RDX in Zone 2 in 2022, and MW-590M2 concentrations remain below RBC (0.13J µg/L Nov 2022). Figures with RDX trend plots were reviewed and discussed.

USACE reviewed the hydraulic monitoring and capture zone analysis. USACE said there was one synoptic water level round in November 2022 and noted the top of mound peaked in 2022 at about 71 ft above mean sea level (msl) in early-June, and then continued to decline in summer to approximately 70.0 ft msl at the time of the synoptic water level round in mid-November. The hydraulic measurements were consistent with past results. The capture zones were developed manually and by the model, and both the model-predicted and observed capture zones include the entirety of the plumes. USACE explained that the elevation range was 69.97 ft msl at the top of the mound to 67.98 ft msl at Wood Road. The gradient was 0.00032 ft/ft msl, which is slightly flatter than 2021. The gradient was consistent with the range of previous years. USACE noted that the downgradient leading edge appears to capture Wood Road wells greater than 2 µg/L perchlorate (MW-584/MW-590), and the downgradient limit of capture is estimated to be between J1NEW0001 and MW-689. USACE noted that there is a low concentration mass of perchlorate not captured, which disperses to less than 2 µg/L by 2027 about 1,000 ft north of Wood Road.

Decision Document (DD) cleanup timelines were discussed. USACE noted the J-1 Northern plume shells were updated recently, and the presentation shows the estimated time to cleanup beginning with the 2011 DD and progressing through using each updated plume shell since then. The 2022 plume shell predicts that perchlorate will cleanup to below the MMCL of 2 µg/L by 2042, and RDX is predicted to cleanup below 0.6 µg/L by 2055. USACE emphasized that the majority of the site reaches the cleanup thresholds by the upper limit of the DD timeline (2037 for perchlorate and 2047 for RDX). It was noted that the extraction, treatment, and reinjection system has been operated at the design extraction rates since January of 2014.

IAGWSP recommends making one change to the chemical monitoring network. They suggest removing MW-164M1 from perchlorate sampling as it has been non-detect to less than 0.5 µg/L since 2010.

The annual monitoring report will be submitted to the agencies for review shortly.

ARNG said that the next tech meeting on 8 June 2023 would be held in-person, as well as virtually. Details will be provided before the meeting.

Action Items

USACE used the document tracking list to review and discuss deliverables.

JBCC Cleanup Team Meeting

The next JBCC Cleanup Team (JBCCCT) will be held in August 2023 (previous meeting was 12 April 2023). Meeting details and presentation materials can be found on the IAGWSP web site at <http://jbcc-iagwsp.org/community/impact/presentations/>. The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

3. SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 01 to 31 May 2023. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 01 to 31 May 2023. These results are compared to the Maximum Contaminant Levels/Health Advisory (MCL/HA) values for respective analytes. Explosives and perchlorate are the primary contaminants of concern (COC) at Camp Edwards. Table 3 summarizes sampling of influent and groundwater samples for per- and polyfluoroalkyl substances (PFAS) from 01 to 31 May 2023. Table 3 PFAS results are compared to the Regional Screening Levels (RSL) published by EPA on 17 May 2022 as well as the EPA Lifetime Health Advisory for PFOS+PFOA and the MassDEP MCL for PFAS6.

The operable units (OUs) under investigation and cleanup at Camp Edwards are the Central Impact Area, Demolition Area 1, Demolition Area 2, J-1 Range, J-2 Range, J-3 Range, L Range, Northwest Corner, Small Arms Ranges, and Training Areas. Environmental monitoring reports for each OU are generated each year to evaluate the current year groundwater results. These

reports are available on the site Environmental Data Management System (EDMS) and at the project document repositories (IAGWSP office and Jonathan Bourne Library).

4. SUBMITTED DELIVERABLES

Deliverables submitted during the reporting period include the following:

- Monthly Progress Report No. 313 for April 2023 10 May 2023
- Response to Email Dated 27 April 2023 regarding PFAS Sampling and Analysis Techniques 03 May 2023
- Final Technical Memorandum: Demolition Area 1 Base Boundary Optimization at D1-EW-3 23 May 2023
- Draft J-2 Range Northern Environmental Monitoring Report for November 2021 through October 2022 24 May 2023

5. SCHEDULED ACTIONS

The following actions and/or documents are being prepared in June 2023.

- Memorandum of Resolution on the Draft Small Arms Ranges Environmental Monitoring Work Plan Addendum
- Response to Comments on the Draft Central Impact Area Source 2023 Quality Assurance Project Plan
- Draft J-2 Range Eastern 2022 Environmental Monitoring Report
- Memorandum of Resolution on the Central Impact Area 2022 Environmental Monitoring Report
- Memorandum of Resolution for the Northwest Corner Demonstration of Compliance Report (*on hold pending resolution of PFAS issues*)
- Draft Demolition Area 2 2022 Environmental Monitoring Report

TABLE 1
Sampling Progress: 01 to 31 May 2023

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-641M1	MW-641M1_S23	N	05-25-2023	Ground Water	113.2	123.2
Demolition Area 1	MW-642M2	MW-642M2_S23	N	05-25-2023	Ground Water	77.3	87.3
Demolition Area 1	MW-642M1	MW-642M1_S23	N	05-25-2023	Ground Water	104.3	114.3
Demolition Area 1	MW-582M2	MW-582M2_S23	N	05-25-2023	Ground Water	84	94
Demolition Area 1	MW-582M1	MW-582M1_S23	N	05-25-2023	Ground Water	134	144
Demolition Area 1	MW-659M2	MW-659M2_S23	N	05-24-2023	Ground Water	85	95
J2 Range Northern	BH-738	BH-738-342-347	N	05-24-2023	Water	342	347
Demolition Area 1	MW-659M1	MW-659M1_S23	MS	05-24-2023	Ground Water	120	130
Demolition Area 1	MW-659M1	MW-659M1_S23	N	05-24-2023	Ground Water	120	130
Demolition Area 1	MW-659M1	MW-659M1_S23	SD	05-24-2023	Ground Water	120	130
Demolition Area 1	MW-569M2	MW-569M2_S23	N	05-24-2023	Ground Water	84	94
Demolition Area 1	MW-569M1	MW-569M1_S23	N	05-24-2023	Ground Water	114	124
J2 Range Northern	BH-738	BH-738-332-337	N	05-24-2023	Water	332	337
Demolition Area 1	MW-571M2	MW-571M2_S23	N	05-24-2023	Ground Water	74	84
Demolition Area 1	MW-571M1	MW-571M1_S23	N	05-24-2023	Ground Water	114	124
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-18	FB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-18	FB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-18	FB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-18	FB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-738	BH-738-322-327	N	05-23-2023	Water	322	327
Demolition Area 1	MW-248M3	MW-248M3_S23	N	05-23-2023	Ground Water	143	153
J2 Range Northern	BH-738	BH-738-312-317	N	05-23-2023	Water	312	317
J2 Range Northern	BH-738	BH-738-302-307	N	05-23-2023	Water	302	307
J2 Range Northern	BH-738	BH-738-302-307-D	FD	05-23-2023	Water	302	307
J2 Range Northern	FIELDQC	WS2-FRB-0523	AB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	WS2-TB-0523	TB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	WS-2	WS-2_0523	N	05-23-2023	Ground Water	278	298
J2 Range Northern	WS-2	WS-2_0523D	FD	05-23-2023	Ground Water	278	298
J2 Range Northern	FIELDQC	BH-738-EB01-P-052323	EB	05-23-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-EB01-S-052323	EB	05-23-2023	Water Quality Control Matrix	0	0
Demolition Area 1	EW-658	EW-658_S23	N	05-23-2023	Process Water	96	136
J2 Range Northern	BH-738	BH-738-292-297	N	05-23-2023	Water	292	297
Demolition Area 1	MW-431	MW-431_S23	N	05-23-2023	Process Water	88	180
Demolition Area 1	MW-556M2	MW-556M2_S23	N	05-22-2023	Ground Water	111	121
Demolition Area 1	MW-556M1	MW-556M1_S23	N	05-22-2023	Ground Water	153	163
Demolition Area 1	MW-558M2	MW-558M2_S23	N	05-22-2023	Ground Water	98	108
Demolition Area 1	MW-558M1	MW-558M1_S23	N	05-22-2023	Ground Water	134	144
Demolition Area 1	MW-559M2	MW-559M2_S23	N	05-22-2023	Ground Water	87	97
Demolition Area 1	MW-559M1	MW-559M1_S23	N	05-22-2023	Ground Water	135.6	145.6
Demolition Area 1	MW-648M1	MW-648M1_S23	N	05-18-2023	Ground Water	112	122
Demolition Area 1	MW-31S	MW-31S_S23	N	05-18-2023	Ground Water	98	103
Demolition Area 1	MW-31S	MW-31S_S23D	FD	05-18-2023	Ground Water	98	103
J2 Range Northern	BH-738	BH-738-282-287	N	05-18-2023	Water	282	287
Demolition Area 1	MW-31M	MW-31M_S23	N	05-18-2023	Ground Water	113	123
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-17	FB	05-18-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-17	FB	05-18-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-17	FB	05-18-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-17	FB	05-18-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-31D	MW-31D_S23	N	05-18-2023	Ground Water	133	138
J2 Range Northern	BH-738	BH-738-272-277	N	05-17-2023	Water	272	277
J2 Range Northern	BH-738	BH-738-262-267	N	05-17-2023	Water	262	267
J2 Range Northern	BH-738	BH-738-252-257	N	05-17-2023	Water	252	257
Demolition Area 1	MW-352M1	MW-352M1_S23	N	05-17-2023	Ground Water	115	125
Demolition Area 1	MW-353M2	MW-353M2_S23	N	05-17-2023	Ground Water	57	67

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 01 to 31 May 2023

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-353M1	MW-353M1_S23	N	05-17-2023	Ground Water	107	117
J2 Range Northern	BH-738	BH-738-242-247	N	05-17-2023	Water	242	247
Demolition Area 1	MW-597M2	MW-597M2_S23	N	05-17-2023	Ground Water	118	128
J2 Range Northern	BH-738	BH-738-232-237	N	05-17-2023	Water	232	237
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-16	FB	05-17-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-16	FB	05-17-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-597M1	MW-597M1_S23	N	05-17-2023	Ground Water	148	158
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-16	FB	05-17-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-16	FB	05-17-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-738	BH-738-222-227	N	05-16-2023	Water	222	227
J2 Range Northern	BH-738	BH-738-212-217	N	05-16-2023	Water	212	217
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-15	FB	05-16-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-EFF-15	FB	05-16-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-15	FB	05-16-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-GAC-MID1-15	FB	05-16-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-543M2	MW-543M2_S23	N	05-16-2023	Ground Water	91.8	101.8
Demolition Area 1	MW-543M1	MW-543M1_S23	N	05-16-2023	Ground Water	127	137
J2 Range Northern	BH-738	BH-738-202-207	N	05-16-2023	Water	202	207
Demolition Area 1	MW-544M3	MW-544M3_S23	N	05-16-2023	Ground Water	77.5	87.5
Demolition Area 1	MW-544M2	MW-544M2_S23	N	05-16-2023	Ground Water	112	122
J2 Range Northern	BH-738	BH-738-197	N	05-16-2023	Water	197	197
Demolition Area 1	MW-544M1	MW-544M1_S23	N	05-16-2023	Ground Water	162	172
Demolition Area 1	MW-544M1	MW-544M1_S23D	FD	05-16-2023	Ground Water	162	172
J2 Range Northern	BH-738	BH-738-187	N	05-15-2023	Water	187	187
J2 Range Northern	BH-738	BH-738-187-D	FD	05-15-2023	Water	187	187
J2 Range Northern	BH-738	BH-738-177	N	05-15-2023	Water	177	177
J2 Range Northern	BH-738	BH-738-167	N	05-15-2023	Water	167	167
J2 Range Northern	FIELDQC	BH-738-EB01-B-051523	EB	05-15-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-19S	MW-19S_S23	N	05-15-2023	Ground Water	38	48
Demolition Area 1	MW-19S	MW-19S_S23D	FD	05-15-2023	Ground Water	38	48
J2 Range Northern	BH-738	BH-738-157	N	05-15-2023	Water	157	157
Demolition Area 1	MW-211M2	MW-211M2_S23	N	05-15-2023	Ground Water	175	185
J2 Range Northern	FIELDQC	BH-738-EB01-MP-051523	EB	05-15-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-738-EB01-PA-051523	EB	05-15-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-FRB-05-051523	AB	05-15-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-211M1	MW-211M1_S23	N	05-15-2023	Ground Water	200	210
Demolition Area 1	MW-173M2	MW-173M2_S23	N	05-15-2023	Ground Water	208	218
Demolition Area 1	MW-173M1	MW-173M1_S23	N	05-15-2023	Ground Water	243	253
Demolition Area 1	MW-76S	MW-76S_S23	N	05-11-2023	Ground Water	85	95
Demolition Area 1	MW-76M2	MW-76M2_S23	N	05-11-2023	Ground Water	105	115
Demolition Area 1	MW-76M1	MW-76M1_S23	MS	05-11-2023	Ground Water	125	135
Demolition Area 1	MW-76M1	MW-76M1_S23	N	05-11-2023	Ground Water	125	135
Demolition Area 1	MW-76M1	MW-76M1_S23	SD	05-11-2023	Ground Water	125	135
Demolition Area 2	MW-311M1	MW-311M1_S23	N	05-11-2023	Ground Water	222	232
Demolition Area 1	MW-546M2	MW-546M2_S23	N	05-10-2023	Ground Water	100	110
J2 Range Northern	BH-737	BH-737-352-357	N	05-10-2023	Water	352	357
J2 Range Northern	BH-737	BH-737-352-357-D	FD	05-10-2023	Water	352	357
Demolition Area 1	MW-546M1	MW-546M1_S23	N	05-10-2023	Ground Water	140	150
Demolition Area 1	MW-545M4	MW-545M4_S23	N	05-10-2023	Ground Water	72	82
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-14	FB	05-10-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-14	FB	05-10-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-14	FB	05-10-2023	Water Quality Control Matrix	0	0

TABLE 1
Sampling Progress: 01 to 31 May 2023

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-14	FB	05-10-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-737	BH-737-342-347	N	05-10-2023	Water	342	347
Demolition Area 1	MW-545M3	MW-545M3_S23	N	05-10-2023	Ground Water	101.5	111.5
Demolition Area 1	MW-545M2	MW-545M2_S23	N	05-10-2023	Ground Water	142	152
Demolition Area 1	MW-545M1	MW-545M1_S23	N	05-10-2023	Ground Water	162	172
J2 Range Northern	BH-737	BH-737-332-337	N	05-09-2023	Water	332	337
J2 Range Northern	FIELDQC	BH-737-MP-050923	EB	05-09-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-B-050923	EB	05-09-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-PA-050923	EB	05-09-2023	Water Quality Control Matrix	0	0
Demolition Area 1	MW-210M2	MW-210M2_S23	N	05-09-2023	Ground Water	156	166
Demolition Area 1	MW-210M1	MW-210M1_S23	N	05-09-2023	Ground Water	201	211
Demolition Area 1	MW-129M3	MW-129M3_S23	MS	05-09-2023	Ground Water	96	106
Demolition Area 1	MW-129M3	MW-129M3_S23	N	05-09-2023	Ground Water	96	106
Demolition Area 1	MW-129M3	MW-129M3_S23	SD	05-09-2023	Ground Water	96	106
Demolition Area 1	MW-129M2	MW-129M2_S23	N	05-09-2023	Ground Water	116	126
Demolition Area 1	MW-129M1	MW-129M1_S23	N	05-09-2023	Ground Water	136	146
J2 Range Northern	BH-737	BH-737-322-327	N	05-08-2023	Water	322	327
J2 Range Northern	BH-737	BH-737-312-317	N	05-08-2023	Water	312	317
Demolition Area 1	MW-114M2	MW-114M2_S23	N	05-08-2023	Ground Water	120	130
Demolition Area 1	MW-114M1	MW-114M1_S23	N	05-08-2023	Ground Water	177	187
Demolition Area 1	MW-77S	MW-77S_S23	N	05-08-2023	Ground Water	83	93
Demolition Area 1	MW-77M2	MW-77M2_S23	N	05-08-2023	Ground Water	120	130
Demolition Area 1	MW-77M2	MW-77M2_S23D	FD	05-08-2023	Ground Water	120	130
Demolition Area 1	MW-77M1	MW-77M1_S23	N	05-08-2023	Ground Water	180	190
J1 Range Southern	J1S-EFF	J1S-EFF-186A	N	05-04-2023	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-186A	N	05-04-2023	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-186A	N	05-04-2023	Process Water	0	0
J2 Range Northern	BH-737	BH-737-302-307	N	05-04-2023	Water	302	307
Demolition Area 1	MW-341M3	MW-341M3_S23	N	05-04-2023	Ground Water	209.5	219.5
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-206A	N	05-04-2023	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-206A	N	05-04-2023	Process Water	0	0
Demolition Area 1	MW-341M2	MW-341M2_S23	N	05-04-2023	Ground Water	264.5	269.5
Demolition Area 1	MW-341M2	MW-341M2_S23D	FD	05-04-2023	Ground Water	264.5	269.5
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-206A	N	05-04-2023	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-206A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-82A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-82A	N	05-04-2023	Process Water	0	0
Demolition Area 1	MW-341M1	MW-341M1_S23	N	05-04-2023	Ground Water	289.5	299.5
Demolition Area 1	D1LE-MID1	D1LE-MID1-82A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-82A	N	05-04-2023	Process Water	0	0
J2 Range Northern	BH-737	BH-737-292-297	N	05-04-2023	Water	292	297
Demolition Area 1	D1-EFF	D1-EFF-154A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-154A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-154A	N	05-04-2023	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-154A	N	05-04-2023	Process Water	0	0
Western Boundary	MW-267M1	MW-267M1_S23	N	05-04-2023	Ground Water	248	258
J2 Range Northern	BH-737	BH-737-282-287	N	05-04-2023	Water	282	287
J2 Range Northern	BH-737	BH-737-282-287-D	FD	05-04-2023	Water	282	287
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-13	FB	05-04-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-13	FB	05-04-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-13	FB	05-04-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-13	FB	05-04-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-737	BH-737-272-277	N	05-03-2023	Water	272	277
Demolition Area 1	MW-661D	MW-661D_S23	N	05-03-2023	Ground Water	251.6	261.6
Demolition Area 1	MW-221M1	MW-221M1_S23	N	05-03-2023	Ground Water	221	231
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-176A	N	05-03-2023	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 01 to 31 May 2023

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-176A	N	05-03-2023	Process Water	0	0
Demolition Area 1	MW-700M2	MW-700M2_S23	N	05-03-2023	Ground Water	147.7	157.7
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-176A	N	05-03-2023	Process Water	0	0
Demolition Area 1	MW-700M1	MW-700M1_S23	MS	05-03-2023	Ground Water	197.9	207.9
Demolition Area 1	MW-700M1	MW-700M1_S23	N	05-03-2023	Ground Water	197.9	207.9
Demolition Area 1	MW-700M1	MW-700M1_S23	SD	05-03-2023	Ground Water	197.9	207.9
J2 Range Eastern	J2E-INF-J	J2E-INF-J-176A	N	05-03-2023	Process Water	0	0
J2 Range Northern	BH-737	BH-737-262-267	N	05-03-2023	Water	262	267
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-176A	N	05-03-2023	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-176A	N	05-03-2023	Process Water	0	0
Demolition Area 1	MW-165M2	MW-165M2_S23	N	05-03-2023	Ground Water	124.5	134.5
J2 Range Eastern	J2E-INF-I	J2E-INF-I-176A	N	05-03-2023	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-200A	N	05-03-2023	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-200A	N	05-03-2023	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-200A	N	05-03-2023	Process Water	0	0
J3 Range	J3-INF	J3-INF-200A	N	05-03-2023	Process Water	0	0
Demolition Area 1	MW-165M1	MW-165M1_S23	N	05-03-2023	Ground Water	184.5	194.5
J2 Range Northern	BH-737	BH-737-252-257	N	05-02-2023	Water	252	257
J2 Range Northern	BH-737	BH-737-242-247	N	05-02-2023	Water	242	247
Demolition Area 1	MW-663D	MW-663D_S23	N	05-02-2023	Ground Water	240.6	250.6
Demolition Area 1	MW-663D	MW-663D_S23D	FD	05-02-2023	Ground Water	240.6	250.6
Central Impact Area	CIA2-EFF	CIA2-EFF-112A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-112A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-112A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-112A	N	05-02-2023	Process Water	0	0
Demolition Area 1	MW-231M2	MW-231M2_S23	N	05-02-2023	Ground Water	165.5	175.5
J2 Range Northern	BH-737	BH-737-232-237	N	05-02-2023	Water	232	237
Central Impact Area	CIA1-EFF	CIA1-EFF-112A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-112A	N	05-02-2023	Process Water	0	0
Demolition Area 1	MW-231M1	MW-231M1_S23	N	05-02-2023	Ground Water	210.5	220.5
Central Impact Area	CIA1-MID1	CIA1-MID1-112A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-112A	N	05-02-2023	Process Water	0	0
J2 Range Northern	BH-737	BH-737-222-227	N	05-02-2023	Water	222	227
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-12	FB	05-02-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-EFF-12	FB	05-02-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-12	FB	05-02-2023	Water Quality Control Matrix	0	0
J2 Range Northern	FIELDQC	BH-737-GAC-MID1-12	FB	05-02-2023	Water Quality Control Matrix	0	0
Central Impact Area	CIA3-EFF	CIA3-EFF-83A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-83A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-83A	N	05-02-2023	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-83A	N	05-02-2023	Process Water	0	0
Demolition Area 1	MW-664M2	MW-664M2_S23	MS	05-02-2023	Ground Water	218.5	228.5
Demolition Area 1	MW-664M2	MW-664M2_S23	N	05-02-2023	Ground Water	218.5	228.5
Demolition Area 1	MW-664M2	MW-664M2_S23	SD	05-02-2023	Ground Water	218.5	228.5
J2 Range Northern	FIELDQC	BH-737-EB01-P-050223	EB	05-02-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-737	BH-737-212-217	N	05-02-2023	Water	212	217
Demolition Area 1	MW-664M1	MW-664M1_S23	N	05-02-2023	Ground Water	248.5	258.5
J2 Range Northern	FIELDQC	BH-737-EB01-P-050123	EB	05-01-2023	Water Quality Control Matrix	0	0
J2 Range Northern	BH-737	BH-737-202-207	MS	05-01-2023	Water	202	207
J2 Range Northern	BH-737	BH-737-202-207	N	05-01-2023	Water	202	207

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 01 to 31 May 2023

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	BH-737	BH-737-202-207	SD	05-01-2023	Water	202	207
Demolition Area 1	MW-240M2	MW-240M2_S23	MS	05-01-2023	Ground Water	125	135
Demolition Area 1	MW-240M2	MW-240M2_S23	N	05-01-2023	Ground Water	125	135
Demolition Area 1	MW-240M2	MW-240M2_S23	SD	05-01-2023	Ground Water	125	135
Demolition Area 1	MW-240M1	MW-240M1_S23	N	05-01-2023	Ground Water	198	208
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-200A	N	05-01-2023	Process Water	0	0
Demolition Area 1	MW-662D	MW-662D_S23	N	05-01-2023	Ground Water	202.3	212.3
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-200A	N	05-01-2023	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-200A	N	05-01-2023	Process Water	0	0
Demolition Area 1	MW-225M3	MW-225M3_S23	N	05-01-2023	Ground Water	125	135
J1 Range Northern	J1N-EFF	J1N-EFF-115A	N	05-01-2023	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-115A	N	05-01-2023	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-115A	N	05-01-2023	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-115A	N	05-01-2023	Process Water	0	0
Demolition Area 1	MW-225M2	MW-225M2_S23	N	05-01-2023	Ground Water	145	155
Demolition Area 1	MW-225M1	MW-225M1_S23	N	05-01-2023	Ground Water	175	185

**TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received May 2023**

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
Demolition Area 2	MW-311M1	MW-311M1_S23	222	232	05-11-2023	SW8330	Picric acid	0.087	J	µg/L	365		0.027	0.20
Demolition Area 1	MW-546M2	MW-546M2_S23	100	110	05-10-2023	SW6850	Perchlorate	0.082	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-546M1	MW-546M1_S23	140	150	05-10-2023	SW6850	Perchlorate	0.080	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-545M4	MW-545M4_S23	72	82	05-10-2023	SW6850	Perchlorate	0.15	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-545M3	MW-545M3_S23	101.5	111.5	05-10-2023	SW6850	Perchlorate	0.29		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-545M2	MW-545M2_S23	142	152	05-10-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22		µg/L	0.60		0.037	0.20
Demolition Area 1	MW-545M2	MW-545M2_S23	142	152	05-10-2023	SW6850	Perchlorate	2.8		µg/L	2.0	X	0.058	0.20
Demolition Area 1	MW-545M1	MW-545M1_S23	162	172	05-10-2023	SW6850	Perchlorate	0.75		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-210M2	MW-210M2_S23	156	166	05-09-2023	SW6850	Perchlorate	0.34		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-77M2	MW-77M2_S23	120	130	05-08-2023	SW8330	2-Amino-4,6-dinitrotoluene	0.070	J	µg/L	7.3		0.031	0.20
Demolition Area 1	MW-77M2	MW-77M2_S23D	120	130	05-08-2023	SW8330	2-Amino-4,6-dinitrotoluene	0.093	J	µg/L	7.3		0.031	0.20
Demolition Area 1	MW-341M3	MW-341M3_S23	209.5	219.5	05-04-2023	SW6850	Perchlorate	0.23		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-341M2	MW-341M2_S23	264.5	269.5	05-04-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.060	J	µg/L	0.60		0.037	0.20
Demolition Area 1	MW-341M2	MW-341M2_S23	264.5	269.5	05-04-2023	SW6850	Perchlorate	0.16	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-341M2	MW-341M2_S23D	264.5	269.5	05-04-2023	SW6850	Perchlorate	0.20		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-341M2	MW-341M2_S23D	264.5	269.5	05-04-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.046	J	µg/L	0.60		0.037	0.20
Western Boundary	MW-267M1	MW-267M1_S23	248	258	05-04-2023	SW6850	Perchlorate	0.095	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-700M1	MW-700M1_S23	197.9	207.9	05-03-2023	SW6850	Perchlorate	0.066	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-663D	MW-663D_S23	240.6	250.6	05-02-2023	SW6850	Perchlorate	2.3		µg/L	2.0	X	0.058	0.20
Demolition Area 1	MW-663D	MW-663D_S23	240.6	250.6	05-02-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.50		µg/L	0.60		0.037	0.20
Demolition Area 1	MW-663D	MW-663D_S23D	240.6	250.6	05-02-2023	SW6850	Perchlorate	2.5		µg/L	2.0	X	0.058	0.20
Demolition Area 1	MW-663D	MW-663D_S23D	240.6	250.6	05-02-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.52		µg/L	0.60		0.037	0.20
Demolition Area 1	MW-231M2	MW-231M2_S23	165.5	175.5	05-02-2023	SW6850	Perchlorate	0.47		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-231M1	MW-231M1_S23	210.5	220.5	05-02-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.059	J	µg/L	0.60		0.037	0.20
Demolition Area 1	MW-231M1	MW-231M1_S23	210.5	220.5	05-02-2023	SW6850	Perchlorate	0.17	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-240M2	MW-240M2_S23	125	135	05-01-2023	SW6850	Perchlorate	0.15	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-240M2	MW-240M2_S23	125	135	05-01-2023	SW8330	4-Amino-2,6-dinitrotoluene	0.039	J	µg/L	7.3		0.036	0.20
Demolition Area 1	MW-240M1	MW-240M1_S23	198	208	05-01-2023	SW8330	4-Amino-2,6-dinitrotoluene	0.073	J	µg/L	7.3		0.036	0.20
Demolition Area 1	MW-662D	MW-662D_S23	202.3	212.3	05-01-2023	SW6850	Perchlorate	0.55		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-225M3	MW-225M3_S23	125	135	05-01-2023	SW6850	Perchlorate	0.074	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-225M1	MW-225M1_S23	175	185	05-01-2023	SW6850	Perchlorate	0.069	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-532M2	MW-532M2_S23	138	148	04-28-2023	SW6850	Perchlorate	0.49		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-532M1	MW-532M1_S23	168	178	04-28-2023	SW6850	Perchlorate	0.30		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-697M1	MW-697M1_S23	243	253	04-26-2023	SW6850	Perchlorate	0.72		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-696M1	MW-696M1_S23	175.2	185.2	04-26-2023	SW6850	Perchlorate	1.3		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-531M1	MW-531M1_S23	138	148	04-26-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.037	0.20
Demolition Area 1	MW-531M1	MW-531M1_S23	138	148	04-26-2023	SW6850	Perchlorate	13.0		µg/L	2.0	X	0.12	0.40
Demolition Area 1	MW-531M1	MW-531M1_S23D	138	148	04-26-2023	SW6850	Perchlorate	12.0		µg/L	2.0	X	0.12	0.40
Demolition Area 1	MW-258M3	MW-258M3_S23	77	82	04-26-2023	SW6850	Perchlorate	0.077	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-258M3	MW-258M3_S23	77	82	04-26-2023	SW8330	4-Amino-2,6-dinitrotoluene	0.080	J	µg/L	7.3		0.036	0.20
Demolition Area 1	MW-258M2	MW-258M2_S23	87	92	04-26-2023	SW6850	Perchlorate	0.10	J	µg/L	2.0		0.058	0.20
Demolition Area 1	MW-258M1	MW-258M1_S23	109	119	04-26-2023	SW6850	Perchlorate	1.0		µg/L	2.0		0.058	0.20
Demolition Area 1	MW-258M1	MW-258M1_S23	109	119	04-26-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.10	J	µg/L	0.60		0.037	0.20

J = Estimated Result
MDL = Method Detection Limit
RL = Reporting Limit

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received May 2023

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
Demolition Area 1	MW-533M1	MW-533M1_S23	160	170	04-25-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.3		µg/L	0.60	X	0.037	0.20
Demolition Area 1	MW-533M1	MW-533M1_S23	160	170	04-25-2023	SW6850	Perchlorate	17.0		µg/L	2.0	X	0.12	0.40
Demolition Area 1	MW-533M1	MW-533M1_S23D	160	170	04-25-2023	SW6850	Perchlorate	16.0		µg/L	2.0	X	0.12	0.40
Demolition Area 1	MW-533M1	MW-533M1_S23D	160	170	04-25-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.1		µg/L	0.60	X	0.037	0.20
Demolition Area 1	MW-248M1	MW-248M1_S23	216.3	226.3	04-25-2023	SW6850	Perchlorate	2.0		µg/L	2.0		0.058	0.20
Demolition Area 2	MW-311M2	MW-311M2_S23	200	210	04-24-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	µg/L	0.60		0.037	0.20
Demolition Area 2	MW-161S	MW-161S_S23	145.5	155.5	04-19-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.32		µg/L	0.60		0.037	0.20
Demolition Area 2	MW-161S	MW-161S_S23D	145.5	155.5	04-19-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.29		µg/L	0.60		0.037	0.20
Demolition Area 2	MW-404M2	MW-404M2_S23	200.04	210.04	04-19-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.44		µg/L	0.60		0.037	0.20
Demolition Area 2	MW-573M2	MW-573M2_S23	155.4	165.4	04-17-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20	J	µg/L	0.60		0.037	0.20
Demolition Area 2	MW-573M2	MW-573M2_S23D	155.4	165.4	04-17-2023	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	µg/L	0.60		0.037	0.20

J = Estimated Result
MDL = Method Detection Limit
RL = Reporting Limit

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

KGS 2023 J2 North PFAS Drilling - J2 Range Northern

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-202-207	BH-737-212-217	BH-737-222-227	BH-737-232-237	BH-737-242-247	BH-737-252-257
	Sampling Depth	202.00 - 207.00	212.00 - 217.00	222.00 - 227.00	232.00 - 237.00	242.00 - 247.00	252.00 - 257.00
	Sampling Date	05/01/2023	05/02/2023	05/02/2023	05/02/2023	05/02/2023	05/02/2023
	SDG	23-0516_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-262-267	BH-737-272-277	BH-737-282-287	BH-737-282-287-D	BH-737-292-297	BH-737-302-307
	Sampling Depth	262.00 - 267.00	272.00 - 277.00	282.00 - 287.00	282.00 - 287.00	292.00 - 297.00	302.00 - 307.00
	Sampling Date	05/03/2023	05/03/2023	05/04/2023	05/04/2023	05/04/2023	05/04/2023
	SDG	23-0526_EDD	23-0526_EDD	23-0549_EDD	23-0549_EDD	23-0549_EDD	23-0549_EDD
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal	Normal
PFAS	Screening Limit	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-312-317	BH-737-322-327	BH-737-332-337	BH-737-342-347	BH-737-352-357	BH-737-352-357-D
	Sampling Depth	312.00 - 317.00	322.00 - 327.00	332.00 - 337.00	342.00 - 347.00	352.00 - 357.00	352.00 - 357.00
	Sampling Date	05/08/2023	05/08/2023	05/09/2023	05/10/2023	05/10/2023	05/10/2023
	SDG	23-0549_EDD	23-0549_EDD	23-0562_EDD	23-0586_EDD	23-0562_EDD	23-0562_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-157	BH-738-167	BH-738-177	BH-738-187	BH-738-187-D	BH-738-197
	Sampling Depth	157.00 - 157.00	167.00 - 167.00	177.00 - 177.00	187.00 - 187.00	187.00 - 187.00	197.00 - 197.00
	Sampling Date	05/15/2023	05/15/2023	05/15/2023	05/15/2023	05/15/2023	05/16/2023
	SDG	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0595_EDD
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate	Normal
PFAS	Screening Limit	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-202-207	BH-738-212-217	BH-738-222-227	BH-738-232-237	BH-738-242-247	BH-738-252-257
	Sampling Depth	202.00 - 207.00	212.00 - 217.00	222.00 - 227.00	232.00 - 237.00	242.00 - 247.00	252.00 - 257.00
	Sampling Date	05/16/2023	05/16/2023	05/16/2023	05/17/2023	05/17/2023	05/17/2023
	SDG	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
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	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-262-267	BH-738-272-277	BH-738-282-287	BH-738-292-297	BH-738-302-307	BH-738-302-307-D
	Sampling Depth	262.00 - 267.00	272.00 - 277.00	282.00 - 287.00	292.00 - 297.00	302.00 - 307.00	302.00 - 307.00
	Sampling Date	05/17/2023	05/17/2023	05/18/2023	05/23/2023	05/23/2023	05/23/2023
	SDG	23-0595_EDD	23-0595_EDD	23-0606_EDD	23-0629_EDD	23-0629_EDD	23-0629_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
PFAS	Screening Limit	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND	19.2	20.8
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)		ND	ND	ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
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	Location	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-312-317	BH-738-322-327	BH-738-332-337	BH-738-342-347
	Sampling Depth	312.00 - 317.00	322.00 - 327.00	332.00 - 337.00	342.00 - 347.00
	Sampling Date	05/23/2023	05/23/2023	05/24/2023	05/24/2023
	SDG	23-0629_EDD	23-0629_EDD	23-0629_EDD	23-0629_EDD
	Sample Type	Normal	Normal	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND
2H,2H,3H,3H-Perfluorooctanoic acid (5:3FTCA)		ND	ND	ND	ND
3-Perfluoroheptyl propanoic acid (7:3FTCA)		ND	ND	ND	ND
3-Perfluoropropyl propanoic acid (3:3FTCA)		ND	ND	ND	ND
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		ND	ND	ND	ND
4:2 Fluorotelomer sulfonic acid (4:2 FTS)		ND	ND	ND	ND
6:2 Fluorotelomer sulfonic acid (6:2 FTS)		ND	ND	ND	ND
8:2 Fluorotelomer sulfonic acid (8:2 FTS)		ND	ND	ND	ND
9-Chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6	ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamide (NEtFOSA)		ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		ND	ND	ND	ND
N-Ethyl perfluorooctanesulfonamidoethanol (NEtFOSE)		ND	ND	ND	ND
N-Methyl heptadecafluorooctanesulfonamide (NMeFOSA)		ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		ND	ND	ND	ND
N-Methyl perfluorooctanesulfonamidoethanol (NMeFOSE)		ND	ND	ND	ND
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)		ND	ND	ND	ND
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)		ND	ND	ND	ND
Perfluoro-3-methoxypropanoic acid (PFMPA)		ND	ND	ND	ND
Perfluoro-4-methoxybutanoic acid (PFMBA)		ND	ND	ND	ND
Perfluorobutanesulfonic acid (PFBS)	600	ND	ND	ND	ND
Perfluorobutanoic acid (PFBA)	1800	ND	ND	ND	ND

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-202-207	BH-737-212-217	BH-737-222-227	BH-737-232-237	BH-737-242-247	BH-737-252-257
	Sampling Depth	202.00 - 207.00	212.00 - 217.00	222.00 - 227.00	232.00 - 237.00	242.00 - 247.00	252.00 - 257.00
	Sampling Date	05/01/2023	05/02/2023	05/02/2023	05/02/2023	05/02/2023	05/02/2023
	SDG	23-0516_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD	23-0526_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.00	0.00	0.00

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-262-267	BH-737-272-277	BH-737-282-287	BH-737-282-287-D	BH-737-292-297	BH-737-302-307
	Sampling Depth	262.00 - 267.00	272.00 - 277.00	282.00 - 287.00	282.00 - 287.00	292.00 - 297.00	302.00 - 307.00
	Sampling Date	05/03/2023	05/03/2023	05/04/2023	05/04/2023	05/04/2023	05/04/2023
	SDG	23-0526_EDD	23-0526_EDD	23-0549_EDD	23-0549_EDD	23-0549_EDD	23-0549_EDD
	Sample Type	Normal	Normal	Normal	Field Duplicate	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.00	0.00	0.00

**PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP**

	Location	BH-737	BH-737	BH-737	BH-737	BH-737	BH-737
	Field Sample ID	BH-737-312-317	BH-737-322-327	BH-737-332-337	BH-737-342-347	BH-737-352-357	BH-737-352-357-D
	Sampling Depth	312.00 - 317.00	322.00 - 327.00	332.00 - 337.00	342.00 - 347.00	352.00 - 357.00	352.00 - 357.00
	Sampling Date	05/08/2023	05/08/2023	05/09/2023	05/10/2023	05/10/2023	05/10/2023
	SDG	23-0549_EDD	23-0549_EDD	23-0562_EDD	23-0586_EDD	23-0562_EDD	23-0562_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	1.51	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	0.294 J	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.294	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	1.80	0.00	0.00	0.00

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	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-157	BH-738-167	BH-738-177	BH-738-187	BH-738-187-D	BH-738-197
	Sampling Depth	157.00 - 157.00	167.00 - 167.00	177.00 - 177.00	187.00 - 187.00	187.00 - 187.00	197.00 - 197.00
	Sampling Date	05/15/2023	05/15/2023	05/15/2023	05/15/2023	05/15/2023	05/16/2023
	SDG	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0587_EDD	23-0595_EDD
	Sample Type	Normal	Normal	Normal	Normal	Field Duplicate	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.00	0.00	0.00

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	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-202-207	BH-738-212-217	BH-738-222-227	BH-738-232-237	BH-738-242-247	BH-738-252-257
	Sampling Depth	202.00 - 207.00	212.00 - 217.00	222.00 - 227.00	232.00 - 237.00	242.00 - 247.00	252.00 - 257.00
	Sampling Date	05/16/2023	05/16/2023	05/16/2023	05/17/2023	05/17/2023	05/17/2023
	SDG	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD	23-0595_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	0.657 J	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.657	0.00	0.00

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	Location	BH-738	BH-738	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-262-267	BH-738-272-277	BH-738-282-287	BH-738-292-297	BH-738-302-307	BH-738-302-307-D
	Sampling Depth	262.00 - 267.00	272.00 - 277.00	282.00 - 287.00	292.00 - 297.00	302.00 - 307.00	302.00 - 307.00
	Sampling Date	05/17/2023	05/17/2023	05/18/2023	05/23/2023	05/23/2023	05/23/2023
	SDG	23-0595_EDD	23-0595_EDD	23-0606_EDD	23-0629_EDD	23-0629_EDD	23-0629_EDD
	Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
PFAS	Screening Limit*	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.00	19.2	20.8

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	Location	BH-738	BH-738	BH-738	BH-738
	Field Sample ID	BH-738-312-317	BH-738-322-327	BH-738-332-337	BH-738-342-347
	Sampling Depth	312.00 - 317.00	322.00 - 327.00	332.00 - 337.00	342.00 - 347.00
	Sampling Date	05/23/2023	05/23/2023	05/24/2023	05/24/2023
	SDG	23-0629_EDD	23-0629_EDD	23-0629_EDD	23-0629_EDD
	Sample Type	Normal	Normal	Normal	Normal
PFAS	Screening Limit ↕	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
Perfluorodecanesulfonic acid (PFDS)		ND	ND	ND	ND
Perfluorodecanoic acid (PFDA)		ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)		ND	ND	ND	ND
Perfluorododecanoic acid (PFDoA)		ND	ND	ND	ND
Perfluoroheptanesulfonic acid (PFHpS)		ND	ND	ND	ND
Perfluoroheptanoic acid (PFHpA)		ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)	39	ND	ND	ND	ND
Perfluorohexanoic acid (PFHxA)	990	ND	ND	ND	ND
Perfluorononanesulfonic acid (PFNS)		ND	ND	ND	ND
Perfluorononanoic acid (PFNA)	5.9	ND	ND	ND	ND
Perfluorooctanesulfonamide (PFOSA)		ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)	4	ND	ND	ND	ND
Perfluorooctanoic acid (PFOA)	6	ND	ND	ND	ND
Perfluoropentanesulfonic acid (PFPeS)		ND	ND	ND	ND
Perfluoropentanoic acid (PFPeA)		ND	ND	ND	ND
Perfluorotetradecanoic acid (PFTeDA)		ND	ND	ND	ND
Perfluorotridecanoic acid (PFTrDA)		ND	ND	ND	ND
Perfluoroundecanoic acid (PFUnA)		ND	ND	ND	ND
	†PFOS + PFOA (EPA)	0.00	0.00	0.00	0.00
	‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	0.0	0.0	0.0	0.0
	§Sum of All Compounds Detected	0.00	0.00	0.00	0.00

PFAS Summary Report – Groundwater Joint Base Cape Cod, IAGWSP

Notes:

ng/L = nanograms per liter; ug/ka = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect, ND = not detected
Non detects are calculated as zero in the summations.

Bolded results indicate detections of PFAS

Bolded and highlighted results indicate detection of PFAS above the EPA Lifetime Health Advisory: PFOS + PFOA > 70 ng/L.

Bolded and highlighted results indicate detection of PFAS6 above the MassDEP MCL: PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA > 20 ng/L

Bolded and highlighted results indicate detection of PFAS above the 2023 May EPA Tapwater (THQ 0.1)

◆ 2023 May EPA Tapwater (THQ 0.1)

† Lifetime Health Advisory, US Environmental Protection Agency, May 2016

The PFOS and PFOA summation includes all detections at and above the DL.

‡ PFAS Maximum Contaminant Level (MCL) Final Amendments ("MCL", 310 CMR 22.00 PFAS MCL Amendments), Massachusetts Department of Environmental Protection, October 2, 2020

The MassDEP PFAS summation includes all quantifiable results reported at and above the LOQ.

PFHxS represents the reported presence of Perfluorohexanesulfonic acid or Perfluorohexane sulfonate as reported for the project.

§ Sum of All Compounds Detected includes all detections at and above the DL.