MONTHLY PROGRESS REPORT #293
FOR AUGUST 2021

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 1 to 31 August 2021.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 27 August 2021:

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, ex-situ treatment processes 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 2.851 billion gallons of water treated and re-injected as of 27 August 2021. No Frank Perkins Road Treatment Facility shutdowns occurred in August.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm. As of 27 August 2021, over 307.7 million gallons of water was treated and re-injected. No Base Boundary MTU shutdowns occurred in August.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 27 August 2021, over 264.4 million gallons of water was treated and re-injected. No Leading Edge system shutdowns occurred in August.

The Pew Road Mobile Treatment Unit (MTU) was turned off on 08 March 2021 (formally 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, 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 27 August 2021, over 1.862 billion gallons of water have been treated and re-injected. No MTU E and F shutdowns occurred in August.

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 27 August 2021, over 1.395 billion gallons of water have been treated and re-injected. No Northern MTU G shutdowns occurred in August.

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 will enter the vadose zone and infiltrate 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 27 August 2021, over 1.508 billion gallons of water have been treated and re-injected. No MTU H and I shutdowns occurred in August.

MTU J continues to operate at a flow rate of 120 gpm. As of 27 August 2021, over 701.0 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in August.

- 1600 on 13 August 2021 due to a power supply interruption and was restarted at 1057 on 16 August 2021.

MTU K continues to operate at a flow rate of 125 gpm. As of 27 August 2021, over 823.5 million gallons of water have been treated and re-injected. No MTU K shutdowns occurred in August.

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, ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater and use of the existing Fuel Spill-12 (FS-12) infiltration gallery to return treated water to the aquifer.

The J-3 system is currently operating at 255 gpm. As of 27 August 2021, over 1.515 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdowns occurred in August.

- 1548 on 12 August 2021 due to an FS-12 shutdown (energy curtailment program) and was restarted at 1210 on 13 August 2021.
- 1619 on 13 August 2021 due to a power supply interruption and was restarted at 0734 on 16 August 2021.
- 1537 on 26 August 2021 due to an FS-12 shutdown (energy curtailment program) and was restarted at 1017 on 27 August 2021.

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, 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 continues to operate at a flow rate of 125 gpm. As of 27 August 2021, over 680.9 million gallons of water have been treated and re-injected. The following J-1 Range Southern system shutdowns occurred in August.

- 0353 on 07 August 2021 due to high pressure at the extraction well and was restarted at 0822 on 09 August 2021.
- 1034 on 16 August 2021 due to high influent pressure which was determined to be a faulty #1601 pressure transmitter; the transmitter was disabled, a new one ordered, and the #1512 inlet bag filter transmitter was set as an interim pressure alarm and shutoff, and was restarted at 0827 on 17 August 2021.
- 1005 on 24 August 2021 to replace the faulty #1601 influent pressure transmitter and reprogram it as the high inlet pressure shut off alarm, and was restarted at 1020 on 24 August 2021.

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, 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 27 August 2021, over 1.002 billion gallons of water have been treated and re-injected. The following J-1 Range Northern MTU shutdowns occurred in August.

- 1021 on 13 August 2021 due to a power supply interruption and was restarted at 1008 on 16 August 2021.

<u>Central Impact Area RA</u>

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 (IX) resin and granular activated carbon (GAC) 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 27 August 2021, over 2.567 billion gallons of water have been treated and re-injected. No CIA system shutdowns occurred in August.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity As of 27 August 2021

CIA
- Performed intrusive investigations.
- Performed cued data collection with 2 MMs and 3 MMs.
- Routine check of CSS cover.
- Routine processing of MD.

Demolition Area 1
- No activity.

Demolition Area 2
- No activity.

J-1 Range
- J1 South vegetation removal around MTU for floor repairs.

J-2 Range
- J2 North MTU F bag filter replaced on 19 August 2021.
- SPM program groundwater sampling.
- SPM program hydraulic monitoring.
- Project Note PFAS sampling.

J-3 Range
- SPM program groundwater sampling.
- Project Note PFAS sampling.
- J3 bag filters exchanged on 17 August 2021.

L Range
- No activity.

Small Arms Ranges
- Repaired N Range laydown area fence.

Northwest Corner
- No activity.

Training Areas
- Intrusive investigation in Former E Range Geophysical Investigation grids.

Impact Area Roads
- Performed vegetation clearance and UXO removal.

Other
- Collected process water samples from the Central Impact Area (Systems 1 ,2, and 3), Demolition Area 1, J1 Range Northern, J1 Range Southern, J2 Range Eastern, J2 Range Northern, and J3 Range treatment systems.

- Groundwater samples were collected from Demolition Area 1, J2 Range Northern, and J3 Range.

JBCC IAGWSP Tech Update Meeting Minutes for 12 August 2021

Project and Fieldwork Update

Since the last tech meeting, the treatment systems continue to run without interruption with the exception of J-1 South, which went down over the weekend (7-8 August 2021) due to a pump fault. When that occurs, it is typically a power-related surge, and the system is turned back on quickly without any repercussions. The Demolition Area 1 pumps have still not arrived. As soon as the pumps are installed by Dawson, the wells will be turned over to KGS and prioritized for sampling. Groundwater samplers are still in J-3 and should be finishing up by the end of next week and will move to the J-2 Range next (North, then East). A couple of weeks' worth of mowing on utility corridors has been completed. EPA asked if there was any new PFAS data available for J-3. It was noted that were was not and that there were still a couple of wells left to sample so data was pending.

At the Former E Range, Dawson has three grids (F, G and H 19) left to complete and plan to finish today (12 August 2021). No items have been found since the last tech meeting with the exception of one MD, a 30 mm practice projectile that will need to be vented in the BEM. To date, 105 of the 121 grids have been completed, three are in progress. A total of 53 MEC items have been found to date: 29 3.5 inch rockets, one 4.2 inch mortar, five 60mm mortars, eleven 40mm practice grenades and one fuze from a 60mm mortar, one 75mm projectile, three 0.3 pound supplemental charges, and two 37mm projectiles. Next week, crews will begin UXO and vegetation clearance on Jefferson Road and will continue with the roads after that, schedule will be based on access into the CIA. They will be working on roads for the next month or two. Crews are still scheduled to finish around the second week of August with all of the intrusive investigations.

In the Central Impact Area, IE-Weston currently has two dig teams and two Metal Mapper teams. They have completed for the most part the DGM, they have some data gaps but will defer collecting those and begin Metal Mapper. They will increase their dig teams to four. They have two Metal Mappers working in Survey Unit 1, waiting for the okay to move to Survey Unit 2. They have a third Metal Mapper arriving next week. They are continuing digging on "Parson leftovers" in Survey Unit 8 and Survey Unit 9. DGM figures are being edited and will be provided to the group soon so 100% grids can be selected.

Earlier this week, the field crews noticed there was smoke coming from the holding area and after inspection found that it was coming from one of the 3.5" rockets that had originated in the Former E Range. USACE notified the JBCC Fire Department and Range Control. Upon inspection, it was determined that a crack in the item was smoking and crusting over and the determination was made that there was no imminent hazard and it would simply continue to smoke and crust over until it extinguished itself. The next morning the item was out, and it was moved to the white phosphorus (WP) holding area (it wasn't originally identified as a WP round), and packed in wet sand per protocols. While it originally thought that it was an identification error, upon further inspection it was determined that the item looks identical to an HE round and given the condition of the round there was no way to identify that it was a WP round. Additionally, none of the UXO personnel on site or those consulted in Huntsville have ever encountered a 3.5" WP rocket. They do not feel that procedures need to be changed.

J-1 Range Northern Annual Environmental Monitoring Report Presentation

A presentation was provided on the J-1 Range Northern Annual Environmental Monitoring Report. The J-1 Range Northern groundwater treatment system performance statistics were reviewed and discussed. It was noted that during the reporting period (January 2020 to December 2020), at the J-1 North MTU, 132 million gallons of groundwater were treated; 0.76 pounds of perchlorate and 0.11 pounds of RDX were removed.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. For perchlorate concentrations in Zone 1, there is a slight increase from 2018 in the trailing edge well at MW- 346M1 (14.4 µg/L, Nov 2018 to 23.2 µg/L, Dec 2020), which is the maximum perchlorate concentration plume-wide for 2020. Low concentrations continue in the trailing edge at MW-346M2 (0.10J µg/L, Dec 2020) and a declining trend is seen in the mid-plume at MW-265M2 (7.7 µg/L, Nov 2020). There was a slight increase at MW-245M2 (7.3 µg/L /10.3 ug/L in May/Nov 2020, respectively) but below <50 ug/L Perchlorate since 2017). For RDX, there is a steady trend in the trailing edge well at MW-303M2 (5.7 µg/L/5.4 µg/L May/Dec 2020, respectively). There is a slight increasing trend in the mid-plume at MW- 346M1 (14.4 µg/L in Dec 2020). The maximum RDX concentration was detected at MW-245M2 (20.4 µg/L/23.5 µg/L in May/Nov, 2020 respectively) but below <50 ug/L RDX since 2018.

For Perchlorate concentrations in Zone 2, there continues to be a <0.35 µg/L concentration trend in the trailing edge (MW-370M2). Concentrations in the mid-plume wells were slightly lower or steady during this reporting period. At the leading edge, MW-584M1 (2.2 µg/L/2.2 µg/L in May/Dec 2020) and MW- 590M2 (3.7 µg/L/3.8 µg/L in May/Dec 2020) continue to fluctuate above the MMCL. For RDX, there is a continued non-detect in the trailing edge (MW-370M2, since 2014). The first low detections in the deep trailing edge were seen in MW-370M1 (0.76 µg/L/0.71 µg/Lin May/Dec, 2020, respectively, since sampling resumed in 2015). There is a slightly decreasing trend between 1.0 – 2.0 µg/L in the mid-plume (MW564M1). The maximum RDX concentration was detected at MW-564M1 (1.6 µg/L, May 2020). The first detection above the RBC at Wood Road occurred in MW-590M2 µg/L (0.66 Dec 2020).

The hydraulic monitoring and capture zone analysis was reviewed and discussed. There was one synoptic water level round in November 2020, and hydraulic measurements were consistent with past results. The maximum top of mound in 2020 was approximately 74 ft msl mid-July then it declined in the fall to about 73 ft msl at time of synoptic water level round. The capture zones were developed manually and by model. The model predicted and observed capture zones include the entire plumes. The observed capture zone is slightly wider than the model predicted. EPA noted that there was still a lot of mass between the source area and extraction well 2 (the most upgradient extraction well) which appeared to impact the cleanup estimates.

EPA requested a modeling run for another extraction well to see if it would speed up cleanup times. It was noted that this had been discussed last year, and it was determined that the feasibility of another extraction well in Zone 2 to evaluate if it would speed up the time to cleanup would be conducted at the next plume shell update. EPA requested that the plume shell be updated now. USACE noted that it would be discussed internally but could be scheduled sooner than originally planned.

Decision Document cleanup timelines were discussed and plume cleanup progress figures were displayed. Perchlorate and RDX observed measurements do not indicate any obvious delays in

cleanup timeline. Based on the current plume shell, perchlorate and RDX time to cleanup was extended by a few years for each. Perchlorate concentrations in MW-370M1 above 2.0 µg/L, if sustained, could impact cleanup timelines. Perchlorate and RDX concentrations in MW-584M1 and MW-590M2 appear to be captured. IAGWSP recommends making no modifications to treatment system operations or to the hydraulic monitoring network. It was suggested that extraction well J1NEW0002 undergo a well cleaning effort as it has been operating continuously since January 2014. IAGWSP recommends increasing the sampling frequency from annual to semi-annual for well MW-547 to confirm recent increasing trends. It was also recommended that sampling frequency be reduced at MW-546MW from semi-annual to annual.

Demolition Area 2 Annual Monitoring Report Presentation

A presentation was provided on the Demolition Area 2 Annual Monitoring Report. During the reporting period (June 2020 to May 2021), no new fieldwork was conducted, but there was an update to the RDX plume shell using the drift function. Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. In fall 2020, RDX was detected in six of twelve monitoring wells sampled at a maximum concentration of 1.24 µg/L (MW- 161S) and two of the detections were below the Reporting Limit (RL) of 0.2 µg/L. In spring 2021, RDX was detected in twelve of twenty-one samples at concentrations ranging from 0.047 µg/L (MW-380M1) to 0.59 µg/L (MW-161S). Two samples collected in fall 2020 (MW-161S & MW404M2) contained RDX at concentrations exceeding the 0.6 µg/L Risk-Based Concentration (RBC). Only the sample from MW-161S exceeded the EPA RSL of 0.97 µg/L. None exceeded the 2 µg/L USEPA Lifetime Health Advisory. HMX was the only other explosive compounds detected during this reporting period and was detected in MW-160S, MW-161S and MW-404M2 at concentrations below the RL.

Figures showing RDX trend plots and the model predicted plumes vs. observed concentrations were displayed. The groundwater modeling update was discussed. It was noted that the RDX Plume Shell was created with data through 31 December 2019 and that 666 points were forward migrated. The maximum detected concentration used in plume shell was 0.91 ppb (MW-161S). The drift update used data from Spring 2020, Fall 2020 & Spring 2021. It was noted that there was a maximum kriged value of 0.69 µg/L compared to a measured value of 0.62 µg/L Figures showing the RDX Model-Predicted (2019 plume shell), observed, and Drift Simulated Plume through May 2021 was displayed and discussed.

Decision Document cleanup timelines were discussed. The estimates presented in the 2015 Decision Document addendum of below Health Advisory (2 µg/L) by 2016, below RBC (0.6 µg/L) by 2018, and below background level (0.25 µg/L) by 2025 were shown. The updated RDX drift plume shell estimates that in 2023.5, concentrations will be below RBC. It was noted that during the reporting period, no monitoring wells exceeded 2 µg/L and only two exceeded 0.6 µg/L. The maximum detected concentration was 1.24 µg/L (MW161S). IAGWSP recommends that the sample frequency at MW-160S be reduced to annual as concentrations have ranged from ND to a maximum of 0.3 µg/L since May 2016. At, MW- 406M1, although this well is sampled annually, RDX has not been detected since sampling began at this well in January 2006. It is recommended that the sample frequency be reduced to biennial.

Similarly at MW-435M1(sampled semi-annually) RDX has never been detected since sampling began in January 2006. It is recommended that the sample frequency be reduced to annual. MW-435M2 is sampled semi-annually and has been ND since November 2016. It is recommended that the sample frequency be reduced to annual. MW-654M1and MW-655M2 have been sampled

semi-annually since November 2016, but RDX has never been detected in these wells. It is recommended that the sample frequency be reduced to annual at both. MW-655M1 has been sampled semi-annually since November 2016. Concentrations in this well have never exceeded 0.26 µg/L (November 2016), and since concentration have been trace (below the RL) to ND. It is recommended that the sample frequency be reduced to annual.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The JBCC Cleanup Team (JBCCCT) meeting was conducted virtually on 28 July 2021. Presentation materials can be found on the IAGWSP web site at https://jbcc-iagwsp.org/iagwsp/community/impact/presentations/. The Cleanup Team meeting discussed late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The next meeting date has not been scheduled. Upcoming meeting dates will be posted at http://jbcc-iagwsp.org/community/public/ in the near future. 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 1 to 31 August 2021. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 to 31 August 2021. 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 1 June 2019 to present.

The twelve OUs under investigation and cleanup at Camp Edwards are the Central Impact Area, Demolition Area 1, Demolition Area 2, Former A Range, J-1 Range, J-2 Range, J-3 Range, L Range, Northwest Corner, Small Arms Ranges, Training Area, and Western Boundary. 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. 292 for July 2021	11 August 2021
• Draft Demolition Area 2 2021 Annual Environmental Monitoring Report	11 August 2021
• Response to Comments for Draft L Range 2021 Annual Environmental Monitoring Report	19 August 2021
• Final 2020 Source Removal Annual Report at the Central Impact Area	30 August 2021
• Final J-3 Range 2020 Annual Environmental Monitoring Report	31 August 2021

5. SCHEDULED ACTIONS

The following actions and/or documents were being prepared or revised in August 2021 and will be in progress in September 2021.

- J-3 Range 2020 Final Annual Environmental Monitoring Report pending MassDEP approval letter
- L Range Draft Annual Environmental Monitoring Report
- Small Arms Ranges Annual Environmental Monitoring Report
- Small Arms Ranges Revised Completion of Work Report
- IRA Status and Completion Report
- Northwest Corner Demonstration of Compliance Report for agency feedback/approval
- J-2 Range, Phase-2, Addendum to Post-DD Confirmation Geophysical and Soil Investigation Findings Project Note
- J-3 Range Post-DD Confirmation Geophysical and Soil Investigation Findings Revised Final Project Note
- CIA 2020 Revised Draft Source Removal Annual Report
- CIA Source Area QAPP
- J-1 Range North 2021 Draft Annual Environmental Monitoring Report
- J-1 Range South 2021 Draft Annual Environmental Monitoring Report
- Demolition Area 1 2021 Draft Annual Environmental Monitoring Report

TABLE 1
Sampling Progress: 1 to 31 August 2021

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-730M1	MW-730M1_S21	N	08-30-2021	Ground Water	185.8	195.8
Demolition Area 1	MW-731M3	MW-731M3_S21	N	08-30-2021	Ground Water	160.1	170.1
Demolition Area 1	MW-731M2	MW-731M2_S21	N	08-30-2021	Ground Water	190.9	200.9
Demolition Area 1	MW-731M1	MW-731M1_S21	N	08-30-2021	Ground Water	220.8	230.8
J2 Range Northern	MW-313M3	MW-313M3_F21	N	08-24-2021	Ground Water	195.07	205.57
J2 Range Northern	MW-313M2	MW-313M2_F21	N	08-24-2021	Ground Water	215.46	225.49
J2 Range Northern	MW-313M1	MW-313M1_F21	N	08-24-2021	Ground Water	255.42	265.42
J2 Range Northern	MW-587M2	MW-587M2_F21	N	08-24-2021	Ground Water	220	230
J2 Range Northern	MW-587M2	MW-587M2_F21D	FD	08-24-2021	Ground Water	220	230
J2 Range Northern	MW-587M1	MW-587M1_F21	N	08-24-2021	Ground Water	250	260
J2 Range Northern	MW-587M1	MW-587M1_F21D	FD	08-24-2021	Ground Water	250	260
J2 Range Northern	MW-631M2	MW-631M2_F21	N	08-23-2021	Ground Water	200.1	210.1
J2 Range Northern	MW-631M1	MW-631M1_F21	N	08-23-2021	Ground Water	233.1	243.1
J2 Range Northern	MW-634M3	MW-634M3_F21	N	08-23-2021	Ground Water	170.6	180.6
J2 Range Northern	MW-634M2	MW-634M2_F21	N	08-23-2021	Ground Water	200.6	210.6
J2 Range Northern	MW-634M1	MW-634M1_F21	N	08-23-2021	Ground Water	305.6	315.6
J2 Range Northern	MW-635M1	MW-635M1_F21	N	08-19-2021	Ground Water	265.4	275.4
J2 Range Northern	MW-585M3	MW-585M3_F21	N	08-19-2021	Ground Water	198.5	208.5
J2 Range Northern	MW-585M3	MW-585M3_F21D	FD	08-19-2021	Ground Water	198.5	208.5
J2 Range Northern	MW-585M2	MW-585M2_F21	N	08-19-2021	Ground Water	218.5	228.5
J2 Range Northern	MW-585M1	MW-585M1_F21	N	08-19-2021	Ground Water	240	250
J2 Range Northern	J2EW1-MW1-B	J2EW1-MW1-B_F21	N	08-18-2021	Ground Water	205.82	215.82
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F21	N	08-18-2021	Ground Water	240.8	250.8
J2 Range Northern	J2EW1-MW1-C	J2EW1-MW1-C_F21D	FD	08-18-2021	Ground Water	240.8	250.8
J3 Range	RS0011OSNK	RS0011OSNK_F21	N	08-17-2021	Ground Water	0	0
J2 Range Northern	MW-322M1	MW-322M1_F21	N	08-17-2021	Ground Water	245.77	255.77
J3 Range	90PLT01006	90PLT01006_F21	N	08-17-2021	Process Water	0	0
J3 Range	MW-218M3	MW-218M3_F21	N	08-16-2021	Ground Water	78	83
J3 Range	MW-576M3	MW-576M3_F21	N	08-10-2021	Ground Water	98.9	108.9
J3 Range	MW-576M2	MW-576M2_F21	N	08-10-2021	Ground Water	133.9	143.9
J3 Range	MW-576M2	MW-576M2_F21D	FD	08-10-2021	Ground Water	133.9	143.9
J3 Range	MW-576M1	MW-576M1_F21	N	08-10-2021	Ground Water	173.9	183.9
J3 Range	90MP0059B	90MP0059B_F21	N	08-09-2021	Ground Water	116.39	118.89
J3 Range	MW-198M4	MW-198M4_F21	N	08-05-2021	Ground Water	70	75
J3 Range	J3-EFF	J3-EFF-179A	N	08-05-2021	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-179A	N	08-05-2021	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-179A	N	08-05-2021	Process Water	0	0
J3 Range	J3-INF	J3-INF-179A	N	08-05-2021	Process Water	0	0
J3 Range	MW-198M3	MW-198M3_F21	N	08-05-2021	Ground Water	100	105
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-185A	N	08-05-2021	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-185A	N	08-05-2021	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-185A	N	08-05-2021	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-185A	N	08-05-2021	Process Water	0	0
J3 Range	MW-198M2	MW-198M2_F21	N	08-05-2021	Ground Water	120	125
Demolition Area 1	D1LE-EFF	D1LE-EFF-61A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-61A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-61A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-61A	N	08-05-2021	Process Water	0	0
J3 Range	MW-198M1	MW-198M1_F21	N	08-05-2021	Ground Water	150	155
Demolition Area 1	D1-EFF	D1-EFF-133A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-133A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-133A	N	08-05-2021	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-133A	N	08-05-2021	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-165A	N	08-04-2021	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-165A	N	08-04-2021	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-165A	N	08-04-2021	Process Water	0	0
J3 Range	MW-193S	MW-193S_F21	N	08-04-2021	Ground Water	32.5	37.5
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-155A	N	08-04-2021	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 to 31 August 2021

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-1K	J2E-MID-1K-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-155A	N	08-04-2021	Process Water	0	0
J3 Range	MW-193M1	MW-193M1_F21	N	08-04-2021	Ground Water	57.5	62.5
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-155A	N	08-04-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-155A	N	08-04-2021	Process Water	0	0
Central Impact Area	CIA2-EFF	CIA2-EFF-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-91A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA3-EFF	CIA3-EFF-62A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-62A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-62A	N	08-03-2021	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-62A	N	08-03-2021	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-179A	N	08-02-2021	Process Water	0	0
J3 Range	MW-197M3	MW-197M3_F21	N	08-02-2021	Ground Water	60.2	65.2
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-179A	N	08-02-2021	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-179A	N	08-02-2021	Process Water	0	0
J3 Range	MW-197M2	MW-197M2_F21	N	08-02-2021	Ground Water	80.2	85.2
J3 Range	MW-197M2	MW-197M2_F21D	FD	08-02-2021	Ground Water	80.2	85.2
J1 Range Northern	J1N-EFF	J1N-EFF-94A	N	08-02-2021	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-94A	N	08-02-2021	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-94A	N	08-02-2021	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-94A	N	08-02-2021	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received August 2021

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
J3 Range	J3EWIP2	J3EWIP2_F21	149.5	169.5	07-13-2021	SW6850	Perchlorate	1.3		µg/L	2.0		0.086	0.20
J3 Range	J3EWIP2	J3EWIP2_F21	149.5	169.5	07-13-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.23		µg/L	400		0.036	0.20
J3 Range	J3EWIP2	J3EWIP2_F21	149.5	169.5	07-13-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.28		µg/L	0.60		0.034	0.20
J3 Range	J3EWIP2	J3EWIP2_F21D	149.5	169.5	07-13-2021	SW6850	Perchlorate	1.3		µg/L	2.0		0.086	0.20
J3 Range	J3EWIP1	J3EWIP1_F21	153	193	07-13-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.049	J	µg/L	400		0.036	0.20
J3 Range	J3EWIP1	J3EWIP1_F21	153	193	07-13-2021	SW6850	Perchlorate	0.16	J	µg/L	2.0		0.086	0.20
J3 Range	J3EWIP1	J3EWIP1_F21	153	193	07-13-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.085	J	µg/L	0.60		0.034	0.20
J3 Range	J3EW0032	J3EW0032_F21	102	152	07-13-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.38		µg/L	0.60		0.034	0.20
J3 Range	J3EW0032	J3EW0032_F21	102	152	07-13-2021	SW6850	Perchlorate	0.48		µg/L	2.0		0.086	0.20
J3 Range	J3EW0032	J3EW0032_F21	102	152	07-13-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.24		µg/L	400		0.036	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F21	175.61	185.61	07-12-2021	SW6850	Perchlorate	0.61		µg/L	2.0		0.086	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F21	175.61	185.61	07-12-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	µg/L	0.60		0.034	0.20
J3 Range	J3-MW-1-B	J3-MW-1-B_F21D	175.61	185.61	07-12-2021	SW6850	Perchlorate	0.63		µg/L	2.0		0.086	0.20
J3 Range	J3-MW-1-C	J3-MW-1-C_F21	203.61	213.61	07-12-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.082	J	µg/L	0.60		0.034	0.20
J3 Range	MW-637M3	MW-637M3_F21	174.1	184.1	07-12-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.12	J	µg/L	0.60		0.034	0.21
J3 Range	MW-637M2	MW-637M2_F21	214.1	224.1	07-12-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	µg/L	0.60		0.034	0.20
J3 Range	MW-637M2	MW-637M2_F21	214.1	224.1	07-12-2021	SW6850	Perchlorate	2.4		µg/L	2.0	X	0.086	0.20
J3 Range	MW-637M2	MW-637M2_F21D	214.1	224.1	07-12-2021	SW6850	Perchlorate	2.5		µg/L	2.0	X	0.086	0.20
J3 Range	MW-637M1	MW-637M1_F21	236.1	246.1	07-12-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.069	J	µg/L	0.60		0.034	0.20
J3 Range	MW-243M1	MW-243M1_F21	114.5	124.5	07-08-2021	SW6850	Perchlorate	0.38		µg/L	2.0		0.086	0.20
J3 Range	MW-295M1	MW-295M1_F21	145	155	07-08-2021	SW6850	Perchlorate	0.17	J	µg/L	2.0		0.086	0.20
Lima Range	MW-242M1	MW-242M1_F21	235	245	07-07-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.092	J	µg/L	0.60		0.034	0.20
Lima Range	MW-651M1	MW-651M1_F21	242.3	252.3	07-07-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.57		µg/L	0.60		0.034	0.20
Lima Range	MW-595M1	MW-595M1_F21	255.3	265.3	07-07-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.6		µg/L	0.60	X	0.034	0.20
Lima Range	MW-595M1	MW-595M1_F21D	255.3	265.3	07-07-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.7		µg/L	0.60	X	0.034	0.20
Lima Range	MW-596M1	MW-596M1_F21	231.1	241.1	07-07-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.13	J	µg/L	0.60		0.034	0.20
Northwest Corner	RSNW06	RSNW06_S21	0	0	06-30-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.071	J	µg/L	0.60		0.034	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit
September 09, 2021

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
Demolition Area 1

Location	D1-INF	FPR-2-INF	MW-258M1	MW-663D	PR-INF
Field Sample ID	D1-INF_PFAS19	FPR-2-INF_PFAS19	MW-258M1_PFAS19	MW-663D_PFAS19	PR-INF_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	109.00 - 119.00	240.60 - 250.60	0.00 - 0.00
Sampling Date	06/24/2019	06/25/2019	06/19/2019	06/24/2019	06/25/2019
SDG	320517141	320517141	320515981	320517141	320517141
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	20.0 U	20.0 U	20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.10 U	9.50 U	9.80 U	9.80 U	9.80 U
Perfluorobutanesulfonic acid (PFBS)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.910 U	0.950 U	0.980 U	**2.20**	0.980 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluoroheptanesulfonic acid (PFHpS)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluorohexane sulfonate (PFHxS)	0.910 U	0.950 U	0.980 U	0.980 U	2.00 U
Perfluorohexanoic acid (PFHxA)	0.910 U	0.950 U	0.980 U	0.980 U	0.980 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	**1.00 J**	1.50 U
Perfluorooctane sulfonate (PFOS)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.50 U	1.50 U	1.50 U
Perfluoropentanoic acid (PFPeA)	0.910 U	0.950 U	0.980 U	**0.460 J**	0.980 U
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	**1.20 J**	1.50 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.00**	**0.00**	**3.20**	**0.00**
§Sum of All Compounds Collected	**0.00**	**0.00**	**0.00**	**4.86**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J1 Range Northern

Location	J1N-INF2	J1N-INF2	MW-136S	MW-564M1	MW-590M2
Field Sample ID	J1N-INF2_PFAS19	J1N-INF2_PFAS19R	MW-136S_PFAS19	MW-564M1_PFAS19	MW-590M2_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	107.00 - 117.00	227.00 - 237.00	238.00 - 248.00
Sampling Date	06/17/2019	07/30/2019	06/24/2019	06/24/2019	06/24/2019
SDG	320514661	320528231	320517141	320517141	320517141
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	20.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.30 U	9.60 U	9.80 U	9.20 U	9.60 U
Perfluorobutanesulfonic acid (PFBS)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.90 U	1.40 U	**0.990 J**	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.930 U	1.90 U	2.00 U	1.80 U	0.960 U
Perfluorohexanoic acid (PFHxA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	**4.90**	2.90 U	**1.40 J**	2.80 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	**1.80 J**	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	**2.40**	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.930 U	0.960 U	0.980 U	0.920 U	0.960 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**4.90**	**0.00**	**3.80**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**4.90**	**0.00**	**3.80**	**0.00**	**0.00**
§Sum of All Compounds Collected	**6.70**	**0.00**	**4.79**	**0.00**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J2 Range Eastern

Location	J2E-INF-I	J2E-INF-J	J2E-INF-K	MW-307M3	MW-307M3	MW-368M1
Field Sample ID	J2E-INF-I_PFAS19	J2E-INF-J_PFAS19	J2E-INF-K_PFAS19	MW-307M3_PFAS19	MW-307M3_PFAS19D	MW-368M1_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	125.80 - 135.82	125.80 - 135.82	237.35 - 247.35
Sampling Date	06/20/2019	06/20/2019	06/20/2019	06/18/2019	06/18/2019	06/18/2019
SDG	320515981	320515981	320515981	320514662	320514662	320514662
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Field Duplicate**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	20.0 U	18.0 U	19.0 U	17.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.70 U	9.30 U	9.80 U	9.00 U	9.60 U	8.50 U
Perfluorobutanesulfonic acid (PFBS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.50 U	1.80 U	1.90 U	1.70 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluorodecanoic acid (PFDA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	**1.40 J**
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	**0.450 J**
Perfluoroheptanesulfonic acid (PFHpS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluorohexane sulfonate (PFHxS)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorohexanoic acid (PFHxA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U	1.50 U	**0.880 J**	**0.730 J**	**0.650 J**
Perfluorooctane sulfonate (PFOS)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanoic acid (PFOA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	1.30 U
Perfluoropentanoic acid (PFPeA)	0.970 U	0.930 U	0.980 U	0.900 U	0.960 U	0.850 U
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	**4.90**
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.00**	**0.00**	**0.880**	**0.730**	**2.05**
§Sum of All Compounds Collected	**0.00**	**0.00**	**0.00**	**0.880**	**0.730**	**7.40**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J2 Range Eastern

Location	MW-368M2	MW-667M1
Field Sample ID	MW-368M2_PFAS19	MW-667M1_PFAS19
Sampling Depth	202.73 - 212.73	302.30 - 312.30
Sampling Date	06/18/2019	06/17/2019
SDG	320514662	320514661
Sample Type	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.80 U	9.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.80 U	9.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.80 U	9.00 U
Perfluorobutanesulfonic acid (PFBS)	0.880 U	0.900 U
Perfluorobutanoic acid (PFBA)	1.30 U	1.80 U
Perfluorodecanesulfonic acid (PFDS)	1.30 U	1.40 U
Perfluorodecanoic acid (PFDA)	**0.800 J**	**4.30**
Perfluorododecanoic acid (PFDoA)	1.30 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.880 U	0.900 U
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.880 U	0.900 U
Perfluorohexanoic acid (PFHxA)	0.880 U	0.900 U
Perfluorononanoic acid (PFNA)	1.30 U	**2.80**
Perfluorooctane sulfonate (PFOS)	2.60 U	2.70 U
Perfluorooctanesulfonamide (PFOSA)	2.60 U	2.70 U
Perfluorooctanoic acid (PFOA)	1.30 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.880 U	0.900 U
Perfluorotetradecanoic acid (PFTeDA)	2.60 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)	2.60 U	2.70 U
Perfluoroundecanoic acid (PFUnA)	**2.40**	**1.60 J**
†PFOS + PFOA (EPA)	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.800**	**7.10**
§Sum of All Compounds Collected	**3.20**	**8.70**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J2 Range Northern

Location	J2EW0001	J2EW0002	J2N-INF-E	J2N-INF-F	J2N-INF-F	J2N-INF-G
Field Sample ID	J2EW0001_PFAS19	J2EW0002_PFAS19	J2N-INF-E_PFAS19	J2N-INF-F_PFAS19	J2N-INF-F_PFAS19R	J2N-INF-G_PFAS19
Sampling Depth	179.00 - 234.00	198.00 - 233.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
Sampling Date	11/20/2019	11/20/2019	06/18/2019	06/18/2019	07/30/2019	07/30/2019
SDG	320565491	320565491	320514662	320514662	320528231	320528231
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	40.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	19.0 U	20.0 U	9.30 U	9.30 U	9.60 U	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.60 U	10.0 U	9.30 U	9.30 U	9.60 U	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.60 U	10.0 U	9.30 U	9.30 U	9.60 U	9.70 U
Perfluorobutanesulfonic acid (PFBS)	0.960 U	1.00 U	0.930 U	0.930 U	0.960 U	**1.40 J**
Perfluorobutanoic acid (PFBA)	1.40 U	1.50 U	1.40 U	1.90 U	1.40 U	1.50 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.960 U	1.00 U	0.930 U	0.930 U	0.960 U	0.970 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluoroheptanesulfonic acid (PFHpS)	0.960 U	**0.370 J**	0.930 U	**0.400 J**	**0.500 J**	0.970 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	**1.00 J**	1.40 U	**0.940 J**	**1.00 J**	1.50 U
Perfluorohexane sulfonate (PFHxS)	0.960 U	**11.0**	0.930 U	**9.90**	**9.00**	1.90 U
Perfluorohexanoic acid (PFHxA)	0.960 U	**1.30 J**	0.930 U	**1.20 J**	**1.30 J**	**2.30**
Perfluorononanoic acid (PFNA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorooctane sulfonate (PFOS)	2.90 U	**1.30 J**	2.80 U	2.80 U	**1.10 J**	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	**1.50 J**	1.40 U	**1.70 J**	**1.50 J**	1.50 U
Perfluoropentanoic acid (PFPeA)	0.960 U	**0.910 J**	0.930 U	**0.840 J**	**1.00 J**	**1.20 J**
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
†PFOS + PFOA (EPA)	**0.00**	**2.80**	**0.00**	**1.70**	**2.60**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**14.8**	**0.00**	**12.5**	**12.6**	**0.00**
§Sum of All Compounds Collected	**0.00**	**17.4**	**0.00**	**15.0**	**15.4**	**4.90**

PFAS Summary Report – Groundwater
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KGS 2019 PFAS MW&INF
J2 Range Northern

Location	MW-234M2	MW-313M1	MW-587M2
Field Sample ID	MW-234M2_PFAS19	MW-313M1_PFAS19	MW-587M2_PFAS19
Sampling Depth	110.00 - 120.00	255.40 - 265.40	220.00 - 230.00
Sampling Date	06/17/2019	06/19/2019	06/19/2019
SDG	320514661	320515981	320515981
Sample Type	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	20.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.80 U	9.80 U	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.80 U	9.80 U	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.80 U	9.80 U	9.70 U
Perfluorobutanesulfonic acid (PFBS)	0.880 U	0.980 U	0.970 U
Perfluorobutanoic acid (PFBA)	1.80 U	**0.700 J**	1.50 U
Perfluorodecanesulfonic acid (PFDS)	1.30 U	1.50 U	1.50 U
Perfluorodecanoic acid (PFDA)	0.880 U	**1.20 J**	0.970 U
Perfluorododecanoic acid (PFDoA)	1.30 U	1.50 U	1.50 U
Perfluoroheptanesulfonic acid (PFHpS)	0.880 U	0.980 U	0.970 U
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.50 U	1.50 U
Perfluorohexane sulfonate (PFHxS)	**0.600 J**	0.980 U	0.970 U
Perfluorohexanoic acid (PFHxA)	0.880 U	0.980 U	0.970 U
Perfluorononanoic acid (PFNA)	1.30 U	**1.10 J**	1.50 U
Perfluorooctane sulfonate (PFOS)	**1.90 J**	2.90 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.60 U	2.90 U	2.90 U
Perfluorooctanoic acid (PFOA)	**0.550 J**	1.50 U	1.50 U
Perfluoropentanoic acid (PFPeA)	0.880 U	**0.680 J**	0.970 U
Perfluorotetradecanoic acid (PFTeDA)	2.60 U	2.90 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.60 U	2.90 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.30 U	**1.40 J**	1.50 U
†PFOS + PFOA (EPA)	**2.45**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**3.05**	**2.30**	**0.00**
§Sum of All Compounds Collected	**3.05**	**5.08**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J3 Range

Location	J3-INF	J3-INF	MW-163S	MW-163S	MW-163S	MW-227M2
Field Sample ID	J3-INF_PFAS19	J3-INF_PFAS19D	MW-163S_PFAS19	MW-163S_PFAS19D	MW-163S_PFAS19R	MW-227M2_PFAS19
Sampling Depth	0.00 - 0.00	0.00 - 0.00	38.00 - 48.00	38.00 - 48.00	38.00 - 48.00	110.00 - 120.00
Sampling Date	06/17/2019	06/17/2019	06/18/2019	06/18/2019	07/30/2019	06/19/2019
SDG	320514661	320514661	320514662	320514662	320528231	320515981
Sample Type	**Normal**	**Field Duplicate**	**Normal**	**Field Duplicate**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	18.0 U	17.0 U	17.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.20 U	8.60 U	8.60 U	9.30 U	9.60 U
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.90 U	1.80 U	1.70 U	1.70 U	**0.560 J**	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorododecanoic acid (PFDoA)	**1.70 J**	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	**1.50 J**	**1.50 J**	**0.690 J**	**0.610 J**	1.90 U	**0.540 J**
Perfluorohexanoic acid (PFHxA)	0.940 U	0.920 U	**0.410 J**	0.860 U	0.930 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.80 U	**12.0**	**12.0**	**12.0**	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	**0.520 J**	1.40 U	**1.70**	**1.60 J**	**1.30 J**	1.40 U
Perfluoropentanoic acid (PFPeA)	0.940 U	0.920 U	0.860 U	0.860 U	0.930 U	0.960 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	**1.40 J**	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.520**	**0.00**	**13.7**	**13.6**	**13.3**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**2.02**	**1.50**	**14.4**	**14.2**	**13.3**	**0.540**
§Sum of All Compounds Collected	**5.12**	**1.50**	**14.8**	**14.2**	**13.9**	**0.540**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J3 Range

Location	MW-250M2
Field Sample ID	MW-250M2_PFAS19
Sampling Depth	145.00 - 155.00
Sampling Date	06/20/2019
SDG	320515981
Sample Type	**Normal**
PFAS 21 Cmps	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.70 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.70 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.70 U
Perfluorobutanesulfonic acid (PFBS)	0.970 U
Perfluorobutanoic acid (PFBA)	**0.710 J**
Perfluorodecanesulfonic acid (PFDS)	1.40 U
Perfluorodecanoic acid (PFDA)	0.970 U
Perfluorododecanoic acid (PFDoA)	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.970 U
Perfluoroheptanoic acid (PFHpA)	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.970 U
Perfluorohexanoic acid (PFHxA)	0.970 U
Perfluorononanoic acid (PFNA)	1.40 U
Perfluorooctane sulfonate (PFOS)	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U
Perfluoropentanoic acid (PFPeA)	0.970 U
Perfluorotetradecanoic acid (PFTeDA)	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U
†PFOS + PFOA (EPA)	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**
§Sum of All Compounds Collected	**0.710**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J1 Ranges SPM Fall
J1 Range Northern

Location	MW-136M1	MW-136M1	MW-191M2	MW-245M1	MW-245M2	MW-303M2
Field Sample ID	MW-136M1_F20	MW-136M1_F20D	MW-191M2_F20	MW-245M1_F20	MW-245M2_F20	MW-303M2_F20
Sampling Depth	124.00 - 134.00	124.00 - 134.00	120.00 - 130.00	244.00 - 254.00	204.00 - 214.00	235.09 - 245.10
Sampling Date	12/07/2020	12/07/2020	12/07/2020	12/07/2020	11/10/2020	12/08/2020
SDG	320677691	320677691	320677691	320677691	320665921	320677701
Sample Type	**Normal**	**Field Duplicate**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	18.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.60 U	9.20 U	9.70 U	9.30 U	9.30 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.60 U	9.20 U	**15.0 J**	9.30 U	9.30 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.60 U	9.20 U	**2.90 J**	9.30 U	9.30 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluorobutanoic acid (PFBA)	**0.920 J**	**0.670 J**	1.50 U	1.40 U	**4.00**	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	**0.700 J**
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	**1.70 J**
Perfluoroheptanesulfonic acid (PFHpS)	0.960 U	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.40 U	**0.700 J**	1.40 U
Perfluorohexane sulfonate (PFHxS)	**0.360 J**	0.920 U	0.970 U	0.930 U	0.930 U	0.950 U
Perfluorohexanoic acid (PFHxA)	0.960 U	0.920 U	0.970 U	0.930 U	**0.850 J**	0.950 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.960 U	0.920 U	0.970 U	0.930 U	**4.00**	**0.410 J**
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	**2.80**
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.360**	**0.00**	**0.00**	**0.00**	**0.700**	**0.700**
§Sum of All Compounds Collected	**1.28**	**0.670**	**17.9**	**0.00**	**9.55**	**5.61**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J1 Ranges SPM Fall
J1 Range Northern

Location	MW-303M3	MW-326M1	MW-326M2	MW-326M3	MW-346M1	MW-346M2
Field Sample ID	MW-303M3_F20	MW-326M1_F20	MW-326M2_F20	MW-326M3_F20	MW-346M1_F20	MW-346M2_F20
Sampling Depth	139.74 - 149.69	250.01 - 260.01	196.27 - 206.28	165.24 - 175.26	0.00 - 0.00	0.00 - 0.00
Sampling Date	12/08/2020	12/09/2020	12/09/2020	12/09/2020	12/02/2020	12/02/2020
SDG	320677701	320678771	320678771	320678771	320675551	320675551
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	20.0 U	20.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	8.90 U	10.0 U	10.0 U	9.50 U	9.70 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U
Perfluorobutanoic acid (PFBA)	**0.920 J**	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	**1.60 J**	**0.950 J**	**5.40**	**3.50**	**2.50**	**2.40**
Perfluorododecanoic acid (PFDoA)	1.30 U	1.50 U	**1.20 J**	**0.600 J**	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U
Perfluoroheptanoic acid (PFHpA)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U
Perfluorohexanoic acid (PFHxA)	0.890 U	1.00 U	1.00 U	0.950 U	0.970 U	0.930 U
Perfluorononanoic acid (PFNA)	**2.60**	**1.50 J**	**1.40 J**	**2.70**	**3.40**	**3.50**
Perfluorooctane sulfonate (PFOS)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.30 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.890 U	**0.440 J**	1.00 U	0.950 U	**0.620 J**	**0.870 J**
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.30 U	**1.00 J**	**13.0**	**6.90**	**5.90**	**2.50**
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**4.20**	**2.45**	**6.80**	**6.20**	**5.90**	**5.90**
§Sum of All Compounds Collected	**5.12**	**3.89**	**21.0**	**13.7**	**12.4**	**9.27**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J1 Ranges SPM Fall
J1 Range Northern

Location	MW-346M3	MW-346M4	MW-58S
Field Sample ID	MW-346M3_F20	MW-346M4_F20	MW-58S_F20
Sampling Depth	0.00 - 0.00	0.00 - 0.00	100.00 - 110.00
Sampling Date	12/02/2020	12/02/2020	12/07/2020
SDG	320675551	320675551	320677691
Sample Type	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	20.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.80 U	9.20 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.80 U	9.20 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.80 U	9.20 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)	0.980 U	0.920 U	0.930 U
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	**0.730 J**	**1.70 J**	0.930 U
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.980 U	0.920 U	0.930 U
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.980 U	0.920 U	0.930 U
Perfluorohexanoic acid (PFHxA)	0.980 U	0.920 U	0.930 U
Perfluorononanoic acid (PFNA)	**2.20**	**0.650 J**	1.40 U
Perfluorooctane sulfonate (PFOS)	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	**0.750 J**	**0.410 J**	0.930 U
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	**1.00 J**	**6.00**	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**2.93**	**2.35**	**0.00**
§Sum of All Compounds Collected	**4.68**	**8.76**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	J2EW0002	J2EW0002	J2EW2-MW2-B	J2EW2-MW2-C	MW-293M2	MW-293M2
Field Sample ID	J2EW0002_F20	J2EW0002_F20D	J2EW2-MW2-B_F20	J2EW2-MW2-C_F20	MW-293M2_F20	MW-293M2_F20D
Sampling Depth	198.00 - 233.00	198.00 - 233.00	209.79 - 219.79	243.83 - 253.81	196.42 - 206.42	196.42 - 206.42
Sampling Date	09/10/2020	09/10/2020	09/09/2020	09/09/2020	08/27/2020	08/27/2020
SDG	320645641	320645641	320645661	320645661	320641331	320641331
Sample Type	**Normal**	**Field Duplicate**	**Normal**	**Normal**	**Normal**	**Field Duplicate**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	20.0 U	19.0 U	19.0 U	19.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.90 U	9.50 U	9.40 U	9.70 U	9.20 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.990 U	0.950 U	0.940 U	0.970 U	**3.40**	**3.60**
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.990 U	0.950 U	0.940 U	0.970 U	**4.90**	**4.50**
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.40 U	1.50 U	**3.50**	**3.60**
Perfluoroheptanesulfonic acid (PFHpS)	0.990 U	0.950 U	0.940 U	0.970 U	0.920 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	**0.930 J**	**0.910 J**	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	**9.80**	**9.30**	0.940 U	0.970 U	0.920 U	0.950 U
Perfluorohexanoic acid (PFHxA)	**1.10 J**	**1.10 J**	0.940 U	0.970 U	0.920 U	0.950 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U	1.40 U	1.50 U	**2.00**	**1.50 J**
Perfluorooctane sulfonate (PFOS)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	**1.70 J**	**1.70 J**	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	**1.10 J**	**1.20 J**	0.940 U	0.970 U	**0.460 J**	**0.410 J**
Perfluorotetradecanoic acid (PFTeDA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	3.00 U	2.80 U	2.80 U	2.90 U	**1.50 J**	**1.90 J**
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U	1.40 U	1.50 U	**25.0**	**28.0**
†PFOS + PFOA (EPA)	**1.70**	**1.70**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**12.4**	**11.9**	**0.00**	**0.00**	**6.90**	**6.00**
§Sum of All Compounds Collected	**14.6**	**14.2**	**0.00**	**0.00**	**40.8**	**43.5**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	MW-300M1	MW-300M2	MW-300M3	MW-302M2	MW-305M1	MW-348M2
Field Sample ID	MW-300M1_F20	MW-300M2_F20	MW-300M3_F20	MW-302M2_F20	MW-305M1_F20	MW-348M2_F20
Sampling Depth	293.03 - 303.02	197.23 - 207.23	135.31 - 145.31	194.35 - 204.43	202.82 - 212.82	206.54 - 216.54
Sampling Date	09/08/2020	09/08/2020	09/08/2020	08/27/2020	08/31/2020	08/31/2020
SDG	320644781	320644781	320644781	320641331	320642421	320642421
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	18.0 U	19.0 U	18.0 U	18.0 U	20.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.50 U	9.00 U	9.40 U	9.20 U	9.10 U	9.80 U
Perfluorobutanesulfonic acid (PFBS)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	**0.550 J**	1.40 U	1.40 U	**1.00 J**
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorodecanoic acid (PFDA)	**3.10**	**3.60**	**1.50 J**	**2.80**	**2.40**	**2.50**
Perfluorododecanoic acid (PFDoA)	**0.800 J**	**1.10 J**	**0.610 J**	**1.70 J**	1.40 U	**2.20**
Perfluoroheptanesulfonic acid (PFHpS)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorohexane sulfonate (PFHxS)	1.90 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U
Perfluorohexanoic acid (PFHxA)	0.950 U	0.900 U	0.940 U	0.920 U	0.910 U	0.980 U
Perfluorononanoic acid (PFNA)	**3.90**	**2.30**	**0.960 J**	**1.00 J**	**1.40 J**	1.50 U
Perfluorooctane sulfonate (PFOS)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluoropentanoic acid (PFPeA)	**0.580 J**	**0.430 J**	0.940 U	**1.40 J**	0.910 U	**1.20 J**
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	**0.880 J**	2.80 U	2.80 U	2.70 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	**8.50**	**9.20**	**4.80**	**22.0**	**1.40 J**	**8.10**
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**7.00**	**5.90**	**2.46**	**3.80**	**3.80**	**2.50**
§Sum of All Compounds Collected	**16.9**	**17.5**	**8.42**	**28.9**	**5.20**	**15.0**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	MW-586M1	MW-586M2	MW-587M1	MW-588M1	MW-588M2	MW-589M1
Field Sample ID	MW-586M1_F20	MW-586M2_F20	MW-587M1_F20	MW-588M1_F20	MW-588M2_F20	MW-589M1_F20
Sampling Depth	237.00 - 247.00	211.00 - 221.00	250.00 - 260.00	238.00 - 248.00	198.00 - 208.00	240.00 - 250.00
Sampling Date	09/02/2020	09/02/2020	09/10/2020	08/27/2020	08/27/2020	09/02/2020
SDG	320643521	320643521	320645641	320641331	320641331	320643521
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	19.0 U	19.0 U	18.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.60 U	9.40 U	9.30 U	9.20 U	9.00 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.960 U	0.940 U	0.930 U	**3.60**	0.900 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U
Perfluorohexanoic acid (PFHxA)	0.920 U	0.960 U	0.940 U	0.930 U	0.920 U	0.900 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	**0.600 J**
Perfluoropentanoic acid (PFPeA)	**0.490 J**	**0.490 J**	0.940 U	**0.420 J**	0.920 U	**0.600 J**
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.600**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.600**
§Sum of All Compounds Collected	**0.490**	**0.490**	**0.00**	**0.420**	**3.60**	**1.20**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	MW-589M2	MW-621M1	MW-621M2	MW-622M1	MW-622M2	MW-631M1
Field Sample ID	MW-589M2_F20	MW-621M1_F20	MW-621M2_F20	MW-622M1_F20	MW-622M2_F20	MW-631M1_F20
Sampling Depth	211.00 - 221.00	249.40 - 259.40	219.40 - 229.40	245.40 - 255.40	220.40 - 230.40	233.10 - 243.10
Sampling Date	09/02/2020	08/26/2020	08/26/2020	09/01/2020	09/01/2020	08/26/2020
SDG	320643521	320641331	320641331	320642411	320642411	320641331
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.60 U	9.40 U	9.30 U	9.40 U	9.60 U
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U
Perfluorohexanoic acid (PFHxA)	0.940 U	0.960 U	0.940 U	0.930 U	0.940 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.940 U	**0.440 J**	0.940 U	**0.400 J**	0.940 U	**0.420 J**
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
§Sum of All Compounds Collected	**0.00**	**0.440**	**0.00**	**0.400**	**0.00**	**0.420**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	MW-631M2	MW-632M1	MW-632M2	MW-632M2	MW-640M1	MW-640M2
Field Sample ID	MW-631M2_F20	MW-632M1_F20	MW-632M2_F20	MW-632M2_F20D	MW-640M1_F20	MW-640M2_F20
Sampling Depth	200.10 - 210.10	254.50 - 264.50	229.50 - 239.50	229.50 - 239.50	246.00 - 256.00	216.00 - 226.00
Sampling Date	08/26/2020	09/03/2020	09/03/2020	09/03/2020	09/03/2020	09/03/2020
SDG	320641331	320643511	320643511	320643511	320643511	320643511
Sample Type	**Normal**	**Normal**	**Normal**	**Field Duplicate**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	18.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.40 U	9.00 U	9.60 U	9.40 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)	**8.50**	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorobutanoic acid (PFBA)	**1.70 J**	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	1.80 U	0.940 U	0.900 U	0.960 U	**0.360 J**	0.930 U
Perfluorohexanoic acid (PFHxA)	**5.40**	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	**1.90**	**0.450 J**	0.900 U	0.960 U	**0.630 J**	0.930 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.00**	**0.00**	**0.00**	**0.360**	**0.00**
§Sum of All Compounds Collected	**17.5**	**0.450**	**0.00**	**0.00**	**0.990**	**0.00**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

Location	MW-703M1	MW-703M2	MW-704M1	MW-704M2
Field Sample ID	MW-703M1_F20	MW-703M2_F20	MW-704M1_F20	MW-704M2_F20
Sampling Depth	248.00 - 258.00	224.10 - 234.10	244.00 - 254.00	217.80 - 227.80
Sampling Date	08/31/2020	08/31/2020	09/01/2020	09/01/2020
SDG	320642421	320642421	320642411	320642411
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	18.0 U	19.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.10 U	9.20 U	9.70 U	9.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.10 U	9.20 U	9.70 U	9.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.10 U	9.20 U	9.70 U	9.20 U
Perfluorobutanesulfonic acid (PFBS)	0.910 U	0.920 U	0.970 U	0.920 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	**1.40 J**	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)	**3.20**	**1.60 J**	**1.50 J**	**1.90**
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.910 U	0.920 U	0.970 U	0.920 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.910 U	0.920 U	0.970 U	0.920 U
Perfluorohexanoic acid (PFHxA)	0.910 U	0.920 U	0.970 U	0.920 U
Perfluorononanoic acid (PFNA)	**1.80**	**0.900 J**	1.50 U	**0.890 J**
Perfluorooctane sulfonate (PFOS)	2.70 U	2.70 U	2.90 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	**1.30 J**	**2.20 J**	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.50 U	1.40 U
Perfluoropentanoic acid (PFPeA)	**0.650 J**	**0.830 J**	**1.10 J**	**0.400 J**
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	2.70 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.70 U	2.70 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	**0.650 J**	1.40 U	**1.00 J**	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**5.00**	**2.50**	**1.50**	**2.79**
§Sum of All Compounds Collected	**7.60**	**5.53**	**5.00**	**3.19**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-143M2	MW-143M3	MW-163S	MW-163S	MW-181S	MW-193M1
Field Sample ID	MW-143M2_F20	MW-143M3_F20	MW-163S_F20	MW-163S_F20D	MW-181S_F20	MW-193M1_F20
Sampling Depth	117.00 - 122.00	107.00 - 112.00	38.00 - 48.00	38.00 - 48.00	32.25 - 42.25	57.50 - 62.50
Sampling Date	07/20/2020	07/21/2020	07/16/2020	07/16/2020	07/21/2020	07/16/2020
SDG	320629171	320629171	320627321	320627321	320629171	320627321
Sample Type	**Normal**	**Normal**	**Normal**	**Field Duplicate**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	19.0 U	20.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.50 U	9.70 U	9.80 U	9.40 U	9.60 U
Perfluorobutanesulfonic acid (PFBS)	**1.20 J**	**0.620 J**	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	**1.00 J**	**1.00 J**	1.40 U	**0.570 J**
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	**26.0**	**4.20**	1.90 U	2.00 U	1.90 U	1.90 U
Perfluorohexanoic acid (PFHxA)	0.940 U	0.950 U	0.970 U	0.980 U	0.940 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.80 U	**4.90**	**5.00**	**16.0**	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	**0.840 J**	**0.940 J**	**0.510 J**	1.40 U
Perfluoropentanoic acid (PFPeA)	0.940 U	0.950 U	0.970 U	**0.460 J**	0.940 U	**0.490 J**
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**5.74**	**5.94**	**16.5**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**26.0**	**4.20**	**5.74**	**5.94**	**16.5**	**0.00**
§Sum of All Compounds Collected	**27.2**	**4.82**	**6.74**	**7.40**	**16.5**	**1.06**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-193S	MW-196M1	MW-196S	MW-197M1	MW-197M2	MW-197M3
Field Sample ID	MW-193S_F20	MW-196M1_F20	MW-196S_F20	MW-197M1_F20	MW-197M2_F20	MW-197M3_F20D
Sampling Depth	32.50 - 37.50	45.00 - 50.00	32.00 - 37.00	120.00 - 125.00	80.20 - 85.20	60.20 - 65.20
Sampling Date	07/16/2020	07/23/2020	07/23/2020	07/20/2020	07/20/2020	07/20/2020
SDG	320627321	320630121	320630121	320629171	320629171	320629171
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Field Duplicate**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	18.0 U	18.0 U	19.0 U	19.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.20 U	9.00 U	9.40 U	9.30 U	9.20 U
Perfluorobutanesulfonic acid (PFBS)	**2.20**	0.920 U	0.900 U	0.940 U	**1.80 J**	0.920 U
Perfluorobutanoic acid (PFBA)	**1.20 J**	1.80 U	1.80 U	1.40 U	**4.90**	**1.40 J**
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	**0.550 J**	0.900 U	0.940 U	0.930 U	0.920 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.920 U	0.900 U	0.940 U	0.930 U	0.920 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.30 U	1.40 U	**4.00**	1.40 U
Perfluorohexane sulfonate (PFHxS)	**19.0**	**1.00 J**	0.900 U	1.90 U	**37.0**	1.80 U
Perfluorohexanoic acid (PFHxA)	**0.830 J**	**0.950 J**	**0.510 J**	0.940 U	**8.40**	**0.450 J**
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.80 U	**1.10 J**	**3.80**	2.80 U	**10.0**	2.80 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	**2.10**	**1.10 J**	**0.550 J**	**3.10**	**1.10 J**
Perfluoropentanoic acid (PFPeA)	**1.30 J**	**0.660 J**	**0.440 J**	**0.400 J**	**6.50**	**0.440 J**
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**3.20**	**4.90**	**0.550**	**13.1**	**1.10**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**19.0**	**4.75**	**4.90**	**0.550**	**54.1**	**1.10**
§Sum of All Compounds Collected	**24.5**	**6.36**	**5.85**	**0.950**	**75.7**	**3.39**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-197M3	MW-198M1	MW-198M2	MW-198M3	MW-198M4	MW-232M1
Field Sample ID	MW-197M3_F20	MW-198M1_F20	MW-198M2_F20	MW-198M3_F20	MW-198M4_F20	MW-232M1_F20
Sampling Depth	60.20 - 65.20	150.00 - 155.00	120.00 - 125.00	100.00 - 105.00	70.00 - 75.00	77.50 - 82.50
Sampling Date	07/20/2020	07/15/2020	07/15/2020	07/15/2020	07/15/2020	07/16/2020
SDG	320629171	320627321	320627321	320627321	320627321	320627321
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	19.0 U	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.50 U	9.50 U	9.50 U	9.50 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorobutanoic acid (PFBA)	**1.50 J**	1.40 U	**0.740 J**	**0.740 J**	**6.50**	**2.20**
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	**1.80 J**	1.40 U
Perfluorohexane sulfonate (PFHxS)	1.80 U	0.950 U	0.950 U	1.90 U	**4.40**	0.950 U
Perfluorohexanoic acid (PFHxA)	0.920 U	0.950 U	0.950 U	0.950 U	**3.70**	0.950 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctane sulfonate (PFOS)	**1.00 J**	2.80 U	2.90 U	2.80 U	**2.30 J**	2.90 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	**0.990 J**	1.40 U	1.40 U	1.40 U	**2.30**	**0.640 J**
Perfluoropentanoic acid (PFPeA)	**0.430 J**	**0.460 J**	0.950 U	0.950 U	**2.80**	**0.420 J**
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
†PFOS + PFOA (EPA)	**1.99**	**0.00**	**0.00**	**0.00**	**4.60**	**0.640**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**1.99**	**0.00**	**0.00**	**0.00**	**10.8**	**0.640**
§Sum of All Compounds Collected	**3.92**	**0.460**	**0.740**	**0.740**	**23.8**	**3.26**

PFAS Summary Report – Groundwater
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KGS 2020 J3 Range SPM Fall
J3 Range

Location	MW-232M2	MW-30
Field Sample ID	MW-232M2_F20	MW-30_F20
Sampling Depth	61.00 - 66.00	26.00 - 36.00
Sampling Date	07/16/2020	07/21/2020
SDG	320627321	320629171
Sample Type	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	20.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	10.0 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	10.0 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	10.0 U	9.40 U
Perfluorobutanesulfonic acid (PFBS)	1.00 U	0.940 U
Perfluorobutanoic acid (PFBA)	**3.20**	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)	1.00 U	0.940 U
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	1.00 U	0.940 U
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	1.00 U	0.940 U
Perfluorohexanoic acid (PFHxA)	1.00 U	0.940 U
Perfluorononanoic acid (PFNA)	1.50 U	1.40 U
Perfluorooctane sulfonate (PFOS)	3.00 U	**15.0**
Perfluorooctanesulfonamide (PFOSA)	3.00 U	2.80 U
Perfluorooctanoic acid (PFOA)	**1.10 J**	**0.790 J**
Perfluoropentanoic acid (PFPeA)	**0.520 J**	0.940 U
Perfluorotetradecanoic acid (PFTeDA)	3.00 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	3.00 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U
†PFOS + PFOA (EPA)	**1.10**	**15.8**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**1.10**	**15.8**
§Sum of All Compounds Collected	**4.82**	**15.8**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2021 J2 Ranges SPM Spring
J2 Range Northern

Location	J2EW0002
Field Sample ID	J2EW0002_521
Sampling Depth	198.00 - 233.00
Sampling Date	01/13/2021
SDG	320689351
Sample Type	**Normal**
PFAS 21 Cmps	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	**7.40 J**
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U
Perfluorobutanesulfonic acid (PFBS)	0.940 U
Perfluorobutanoic acid (PFBA)	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U
Perfluorodecanoic acid (PFDA)	0.940 U
Perfluorododecanoic acid (PFDoA)	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	**0.430 J**
Perfluoroheptanoic acid (PFHpA)	**0.860 J**
Perfluorohexane sulfonate (PFHxS)	**11.0**
Perfluorohexanoic acid (PFHxA)	**0.900 J**
Perfluorononanoic acid (PFNA)	1.40 U
Perfluorooctane sulfonate (PFOS)	**1.00 J**
Perfluorooctanesulfonamide (PFOSA)	**1.80 J**
Perfluorooctanoic acid (PFOA)	**1.80 J**
Perfluoropentanoic acid (PFPeA)	1.90 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U
†PFOS + PFOA (EPA)	**2.80**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**14.7**
§Sum of All Compounds Collected	**25.2**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2021 J3 Range SPM Fall
J3 Range

Location	90EW0001	J3-EFF	J3EW0032	J3EWIP1	J3EWIP2	J3-INF
Field Sample ID	90EW0001_F21	J3-EFF_F21	J3EW0032_F21	J3EWIP1_F21	J3EWIP2_F21	J3-INF_F21
Sampling Depth	0.00 - 0.00	0.00 - 0.00	102.00 - 152.00	153.00 - 193.00	150.50 - 170.50	0.00 - 0.00
Sampling Date	07/13/2021	07/13/2021	07/13/2021	07/13/2021	07/13/2021	07/13/2021
SDG	320762631	320762631	320762631	320762631	320762631	320762631
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	18.0 U	19.0 U	20.0 U	19.0 U	20.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.50 U	9.80 U	9.40 U	9.80 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.50 U	9.80 U	9.40 U	9.80 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.50 U	9.80 U	9.40 U	9.80 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.950 U	0.980 U	0.940 U	0.980 U	0.950 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.950 U	0.980 U	0.940 U	0.980 U	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.950 U	0.980 U	0.940 U	0.980 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	**0.500 J**	0.950 U	**0.720 J**	**0.520 J**	**2.80**	**1.20 J**
Perfluorohexanoic acid (PFHxA)	0.920 U	0.950 U	0.980 U	0.940 U	0.980 U	0.950 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluorooctane sulfonate (PFOS)	2.70 U	2.90 U	2.90 U	2.80 U	2.90 U	2.80 U
Perfluorooctanesulfonamide (PFOSA)	2.70 U	2.90 U	2.90 U	2.80 U	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.920 U	0.950 U	0.980 U	0.940 U	0.980 U	0.950 U
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	2.90 U	2.90 U	2.80 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.70 U	2.90 U	2.90 U	2.80 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.50 U	1.40 U	1.50 U	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.500**	**0.00**	**0.720**	**0.520**	**2.80**	**1.20**
§Sum of All Compounds Collected	**0.500**	**0.00**	**0.720**	**0.520**	**2.80**	**1.20**

PFAS Summary Report – Groundwater
Joint Base Cape Cod, IAGWSP
KGS 2021 J3 Range SPM Fall
J3 Range

Location	MW-157M1	MW-157M2	MW-157M3	MW-163S	MW-250M1	MW-250M3
Field Sample ID	MW-157M1_F21	MW-157M2_F21	MW-157M3_F21	MW-163S_F21	MW-250M1_F21	MW-250M3_F21
Sampling Depth	154.00 - 164.00	110.00 - 120.00	70.00 - 80.00	38.00 - 48.00	185.00 - 195.00	95.00 - 105.00
Sampling Date	07/14/2021	07/14/2021	07/14/2021	07/14/2021	07/15/2021	07/15/2021
SDG	320763871	320763871	320763871	320763871	320763871	320763871
Sample Type	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**	**Normal**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	19.0 U	19.0 U	20.0 U	19.0 U	18.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.30 U	9.70 U	10.0 U	9.40 U	9.00 U	9.00 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.30 U	9.70 U	10.0 U	9.40 U	9.00 U	9.00 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.30 U	9.70 U	10.0 U	9.40 U	9.00 U	9.00 U
Perfluorobutanesulfonic acid (PFBS)	0.930 U	**9.40**	1.00 U	0.940 U	0.900 U	0.900 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
Perfluorodecanoic acid (PFDA)	0.930 U	0.970 U	1.00 U	0.940 U	0.900 U	0.900 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
Perfluoroheptanesulfonic acid (PFHpS)	0.930 U	0.970 U	1.00 U	0.940 U	0.900 U	0.900 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
Perfluorohexane sulfonate (PFHxS)	0.930 U	**0.720 J**	**1.50 J**	**0.450 J**	**0.550 J**	**1.90**
Perfluorohexanoic acid (PFHxA)	0.930 U	0.970 U	1.00 U	0.940 U	0.900 U	0.900 U
Perfluorononanoic acid (PFNA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
Perfluorooctane sulfonate (PFOS)	2.80 U	2.90 U	3.00 U	**4.80**	2.70 U	**1.00 J**
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	3.00 U	2.80 U	2.70 U	2.70 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.50 U	**0.730 J**	**1.10 J**	1.40 U	1.30 U
Perfluoropentanoic acid (PFPeA)	0.930 U	0.970 U	1.00 U	0.940 U	0.900 U	0.900 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	3.00 U	2.80 U	2.70 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)	2.80 U	2.90 U	3.00 U	2.80 U	2.70 U	2.70 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.30 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.730**	**5.90**	**0.00**	**1.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**0.00**	**0.720**	**2.23**	**6.35**	**0.550**	**2.90**
§Sum of All Compounds Collected	**0.00**	**10.1**	**2.23**	**6.35**	**0.550**	**2.90**

Notes:

ng/L = nanograms per liter; ug/kg = micrograms per kilogram; U = not detected; J = estimated; UJ = estimated non detect

The LOQ value will be used to report non-detects when blank contamination occurs

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

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

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

§ PFAS compounds used in the summation of all analytes are listed in the above table