

**MONTHLY PROGRESS REPORT #297  
FOR DECEMBER 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 December 2021.

**1. SUMMARY OF REMEDIATION ACTIONS**

**Remediation Actions (RA) Underway at Camp Edwards as of 31 December 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, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and injection wells to return treated water to the aquifer.

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gallons per minute (gpm), with over 2.882 billion gallons of water treated and re-injected as of 31 December 2021. The following Frank Perkins Road Treatment Facility shutdowns occurred in December.

- 1207 on 11 December 2021 due to a power supply interruption and was restarted at 0730 on 13 December 2021.
- 0650 on 16 December 2021 due to a power supply interruption and was restarted at 0724 on 16 December 2021.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm. As of 31 December 2021, over 319.5 million gallons of water were treated and re-injected. No Base Boundary MTU shutdowns occurred in December.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 31 December 2021, over 282.1 million gallons of water were treated and re-injected. The following Leading Edge system shutdowns occurred in December.

- 0935 on 13 December 2021 to replace a camlock fitting on the IX effluent valve and was restarted at 1006 on 13 December 2021.

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

J-2 Range Groundwater RA

Northern Plant

The J-2 Range Northern Treatment facility consists of removal and treatment of contaminated groundwater to control further migration of explosives compounds and perchlorate. The

Extraction, Treatment, and Re-infiltration system includes three extraction wells, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration basin to return treated water to the aquifer.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 31 December 2021, over 1.906 billion gallons of water have been treated and re-injected. The following MTU E and F shutdowns occurred in December.

- 0650 on 16 December 2021 due to a power supply interruption and was restarted at 0800 on 16 December 2021.
- 0725 on 28 December 2021 to allow for re-analysis of an effluent sample volume following an anomalously high effluent perchlorate result and was restarted at 1340 on 29 December 2021.

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 31 December 2021, over 1.435 billion gallons of water have been treated and re-injected. The following Northern MTU G shutdowns occurred in December.

- 0650 on 16 December 2021 due to a power supply interruption and was restarted at 0820 on 16 December 2021.
- 1045 on 22 December 2021 to replace bag filters and was restarted at 1115 on 22 December 2021.

#### Eastern Plant

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

The MTUs H and I continue to operate at a flow rate of 250 gpm. As of 31 December 2021, over 1.547 billion gallons of water have been treated and re-injected. The following MTU H and I shutdowns occurred in December.

- 1005 on 03 December 2021 to upgrade VFD wiring and was restarted at 1103 on 03 December 2021.
- 1925 on 06 December 2021 due to a power supply interruption and was restarted at 1146 on 07 December 2021.
- 1531 on 07 December 2021 due to a "VFD fault" alarm and were restarted at 0955 on 08 December 2021.

MTU J continues to operate at a flow rate of 120 gpm. As of 31 December 2021, over 720.5 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in December.

- 1925 on 06 December 2021 due to a power supply interruption and was restarted at 1244 on 07 December 2021.

MTU K continues to operate at a flow rate of 125 gpm. As of 31 December 2021, over 844.2 million gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in December.

- 1925 on 06 December 2021 due to a power supply interruption and was restarted at 1115 on 07 December 2021.

### J-3 Range Groundwater RA

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

The J-3 system is currently operating at 255 gpm. As of 31 December 2021, over 1.557 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdowns occurred in December.

- 1059 on 13 December 2021 due to a high effluent tank alarm caused by an FS-12 shutdown and was restarted at 1246 on 13 December 2021.
- 0944 on 15 December 2021 due to a high effluent tank alarm caused by an FS-12 shutdown and was restarted at 1238 on 15 December 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, an ex-situ treatment process to remove explosives compounds from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Southern MTU continues to operate at a flow rate of 125 gpm. As of 31 December 2021, over 699.9 million gallons of water have been treated and re-injected. The following J-1 Range Southern system shutdowns occurred in December.

- 1925 on 06 December 2021 due to a power supply interruption and was restarted at 1135 on 07 December 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, an ex-situ treatment process to remove explosives compounds and perchlorate from the groundwater, and an infiltration trench to return treated water to the aquifer.

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 31 December 2021, over 1.045 billion gallons of water have been treated and re-injected. The following J-1 Range Northern MTU shutdowns occurred in December.

- 0711 on 16 December 2021 due to a power supply interruption and was restarted at 0750 on 16 December 2021.

### Central Impact Area RA

The Central Impact Area (CIA) Groundwater treatment facility consists of removal and treatment of groundwater to minimize downgradient migration of explosives compounds and perchlorate. The ETR system includes the following components: three extraction wells, an ex-situ treatment process consisting of an ion exchange (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 31 December 2021, over 2.701 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in December.

- 1207 on 11 December 2021 due to a power supply interruption and was restarted at 0815 on 13 December 2021.
- 0703 on 16 December 2021 due to a power supply interruption and was restarted at 0809 on 16 December 2021.
- 0650 on 16 December 2021 due to a power supply interruption and was restarted at 1000 on 16 December 2021.

## **2. SUMMARY OF ACTIONS TAKEN**

### **Operable Unit (OU) Activity as of 31 December 2021:**

#### CIA

- Performed intrusive investigations.
- Completed cued data collection.
- Demo operations commenced; one shot performed.
- Demo ops suspended pending CSS soil maintenance and changeout.
- Commenced CSS soil maintenance and changeout.
- Routine processing of MD.
- Routine check of CSS cover.
- Replaced VFD panel fan motor for CIA 2.

#### Demolition Area 1

- Propane tanks filled and all tanks, pipes, and fittings leak tested.

#### Demolition Area 2

- Groundwater sampling within Demo 2 LTM.

#### J-1 Range

- Bag filters exchanged.
- Groundwater sampling within J-1 North SPM.

#### J-2 Range

- Groundwater sampling for PFAS within J-2 North SPM.

#### J-3 Range

- No activity.

#### L Range

- No activity.

#### Small Arms Ranges

- No activity.

#### Northwest Corner

- No activity.

#### Training Areas

- Inspected staged soil at H Range.

#### Impact Area Roads

- Performed grading and gravel installation.

#### Other

- Collected process water samples from Central Impact Area, Demolition Area 1, J-1 Range Northern, J-1 Range Southern, J-2 Range Eastern, J-2 Range Northern, and J-3 Range treatment systems.
- Groundwater samples were collected from Demolition Area 2 and J-1 Range Northern.

### **JBCC IAGWSP Tech Update Meeting Minutes for 9 December 2021**

#### Project and Fieldwork Update

Currently all systems are running as designed without any issues. There were no breakthroughs in October. The LTM crews continue to work in J-1 North. They will suspend that work once they receive the supplies to begin the J-2 North PFAS sampling, which will take three to four weeks.

Currently, KGS is working on Turpentine Road in the UXO cleared section outside the CIA between Wheelock Road and Tank Alley. They completed the UXO cleared portions of Tank Alley outside of the CIA. They plan on finishing this week and will then demobilize. Dawson is coordinating for off-site disposal of the 50 cubic yards of soil currently staged at H Range.

Weston has eight teams with three metal mapper teams. Metal mapper teams are complete in SU1, SU2, and SU5; SU3-1 is about 95% complete; those are the priority 1 areas. The teams are also metal mapping in priority 2; SU3-2 is approximately 85% complete, and SU4 is about 45% complete. To date, they have done 6,300 digs, and they will continue to work through 21 December 2021. Weather permitting, they will return in January 2022. CDC funding was received by Huntsville, and they indicated a mod could be awarded. The group was reminded that in the event that they open the bunker and find something that is not suitable to be moved, the bunker will be locked, and the EOD team will be called in. EPA suggested that the items be moved directly to the structure when it is time for destruction rather than to the MEC holding area first. This would minimize the number of times the items are moved. USACE will look into whether or not that is possible.

The shots that were scheduled for this week were discussed. Weston's first shot went off without any problems, however when they inspected the area after the detonation, they found three items that weren't part of their shot: an 81 mm mortar, a 105 mm, and 155 mm shrapnel.

When Dawson last performed shots, they did not have a 105 mm or 155 mm in their inventory, but they did have an 81 mm. In March, when Parsons detonated items, they did contain all three of these items. At this time, it is assumed that these items were from Parsons' activities and that Parsons did not police the area correctly when they completed their shot.

USACE is proposing that all soil be removed and hand sifted, removed from the site, and replaced with new soil. Huntsville has reviewed all the protocols in place and while they believe they are all appropriate, someone obviously did not follow them. Requirements for photographs before and after shots and for USACE OESS to perform 100% oversight of shots are being added to the protocols. EPA asked if a 37 mm was also found outside the structure. IAGWSP will check with Weston to see where it was found. IAGWSP will put together a description of next steps for removing and testing the soil. EPA requested that the videos and documentation from when the liner was inspected in April be re-sent to the team.

MassDEP asked what type of after action reports are being generated and if they could be shared with the group. USACE said they could once everything was completed. It was noted that it will be complicated because while Weston performed the shot, there is no indication that they did anything wrong. USACE is not certain what form the documentation will be in, as it will not be the typical Form 6048 used in the past when there has been a significant mistake made by a contractor. In this instance, they will have to look at a previous contractor's actions to try to determine what happened.

#### Central Impact Area Annual Environmental Monitoring Report Presentation

A presentation was provided on the Central Impact Area Annual Environmental Monitoring Report. It was noted that the presentation would cover system operations and performance, annual groundwater sampling results (July 2020 through June 2021) and trends, hydraulic monitoring and groundwater modeling, a comparison to Decision Document criteria, and recommendations.

System performance summaries with statistics for MTUs CIA 1, CIA 2, and CIA 3 were displayed and reviewed. Plots of treatment systems influent trends were displayed and discussed. It was noted that all three systems had breakthrough and media changeouts during the reporting period and that all systems had multiple breakthroughs with CIA 3 having five over a short period of time. During the reporting period, CIA 1 removed 0.80 pounds of RDX and 0.51 pounds of perchlorate, CIA 2 removed 1.22 pounds of RDX and 0.36 pounds of perchlorate, and CIA 3 removed 0.84 pounds of RDX and 0.14 pounds of perchlorate.

Groundwater monitoring results and trends were discussed. Overall, perchlorate ranged from non-detect to 3.0 µg/L (MW-209M1). There were three well locations with concentrations above 2 µg/L. No well locations were above 15 µg/L. RDX concentrations ranged from non-detect to 8.0 µg/L (MW-89M2). There were 37 well locations with concentrations above 0.6 µg/L, 26 locations with concentrations above 0.97 µg/L, and 17 well locations that were above 2 µg/L. There were no well locations with RDX concentrations above 20 µg/L. Monitoring well locations, cross-sections, and trend plots for perchlorate and RDX were displayed and discussed.

It was noted that one aquifer hydraulic analysis was conducted during this reporting period. In January 2021, water levels ranged from 43.35 ft MSL at MW-616M2 (north) to 68.25 ft MSL at MW-184M2 (south). The horizontal gradient in Zone 1 was approximately 0.00201 ft/ft; in Zone

2, it was 0.00416 ft/ft. Measured and model-predicted concentrations and plume figures were shown and discussed.

Decision Document cleanup timelines were discussed. It was noted that the time to cleanup for two areas of the plumes—the 2,000-meter plume and Zone 1 of the main plume—extended significantly.

No modifications are recommended for plant operations, sampling, wellfield extraction rates, or the hydraulic monitoring programs at this time. Regulator comments on the annual report are pending.

#### J-1 Range Southern Annual Environmental Monitoring Report Presentation

A presentation was provided on the J-1 Range Southern Annual Environmental Monitoring Report. It was noted that during the reporting period (January 2020 to December 2020), the RDX plume shell was updated using the five year protocol. The new 2021 plume shell represents initial concentrations of RDX as of 1 January 2021. Forward migrated data were used representing chemistry from November 1997 to November 2020, and a new exponential decay equation was applied to historical sample data before 3D interpolation.

With the new plume shell, the RDX time to cleanup to 0.6 µg/L is 2036. It was noted that on-base RDX < 0.6 µg/L is based on MW-360M2 and 2016-2018 drive point data. The maximum initial RDX of 14.92 µg/L over the base boundary from DBJ1S-718 2018 data (23.0 µg/L). The most off-base RDX < 2.0 µg/L except a small plumelet < 6.0 µg/L upgradient of Checkerberry Lane. The most downgradient wells > 0.6 µg/L are MW-699M1/M2 (maximum RDX, 2.0 µg/L). The 2017 vs, 2021 plume shells were displayed and discussed.

The J-1 Range Southern groundwater treatment system performance statistics were reviewed and discussed. During the reporting period, 62.3 million gallons of groundwater were treated and 0.09 pounds of RDX were removed. There was no breakthrough or media changeout during the reporting period.

Sampling locations, groundwater monitoring results, and trends were reviewed and discussed. The maximum RDX concentration in Zone 1 (source area to J1SEW0001) is 2.6 µg/L (MW-360M2). The plume above risk-based concentrations is currently interpreted to be east of MW-528M1 and between MW-131S/MW-360 and the base boundary. In Zone 2 (J1SEW0001 to J1SEW0002), the maximum concentration is 1.3 µg/L (MW-669M1), which likely reflects migration from upgradient detections seen at MW-647M1 in 2018. It was noted that all Windsong Road wells were below 0.6 µg/L for the second year in a row, Song Bird Circle well MW-592M1 has consistently been less than 1 µg/L since 2015, and the leading edge eastern lobe wells on Pleasant Wood Drive have been non-detect since 2015.

The hydraulic monitoring and capture zone analysis was reviewed and discussed. There was one synoptic water level round in October 2020, and hydraulic measurements were generally consistent with past results. Water levels from the top of the mound increased by approximately 0.3-1.0 ft from 2019 to 2020. The capture zones were developed manually and by model. The United States Geological Survey top of mound well is trending lower in October 2020 after the summer peak (~74 ft msl in June/July), which reflects annual precipitation trends and resulting aquifer recharge. The capture zone is confirmed on the eastern boundary (Song Bird Circle), and the capture zone extent horizontally and vertically downgradient of J1SEW0002 is similar to

October 2019. Most of the leading edge of the plume is captured, however the Leading edge plumelet < 6 µg/L between MW-669 and Checkerberry Lane is not captured.

Decision Document cleanup timelines were discussed. The DD timeline was based on the 2009 Plume Shell. The May 2011 DD cleanup timeline (< 0.6 µg/L) was 2024, but the September 2011 project note that located the leading edge extraction well predicted 2032. Predictions based on the 2021 plume shell estimate that upgradient of J1SEW0001 will be < 0.6 µg/L in 2029. Upgradient of J1SEW0002 will be < 0.6 µg/L in 2036; < 2.0 µg/L in 2023. Downgradient of J1SEW0002 will be < 2.0 µg/L in 2022; < 0.6 in 2035, and Checkerberry Lane will be < 0.6 in 2027. The maximum downgradient migration is approximately 150 feet downgradient of Checkerberry Lane and never reaches Route 130 (Forestdale Road). Figures showing the maximum migration with the 2021 plume shell were displayed and discussed.

IAGWSP is not recommending any changes to the current treatment system operations, hydraulic or chemical monitoring programs. Regulator comments on the annual monitoring report are pending.

#### Action Items

The action items were discussed and updated.

#### **JBCC Cleanup Team Meeting**

The next JBCC Cleanup Team (JBCCCT) has yet to be scheduled (previous meeting was 1 December 2021). Presentation materials from previous meetings can be found on the IAGWSP web site at <http://jbcc-iagwsp.org/community/impact/presentations/>. The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

### **3. SUMMARY OF DATA RECEIVED**

Table 1 summarizes sampling for all media from 1 to 31 December 2021. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 to 31 December 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. 296 for November 2021   | 10 December 2021 |
| • Final Land Use Controls Monitoring Report   | 20 December 2021 |
| • Demolition Area 1 2021 Annual Environmental Monitoring Report<br>Response to Comment Letter | 23 December 2021 |
| • Final UFP-QAPP for Source Response for UXO at Central Impact<br>Area                        | 23 December 2021 |

#### 5. SCHEDULED ACTIONS

The following actions and/or documents are being prepared in January 2022.

- J-1 Range Northern Final Annual Environmental Monitoring Report
- J-2 Range Northern Draft Annual Environmental Monitoring Report
- J-2 Range Eastern Draft Annual Environmental Monitoring Report
- J-3 Range Draft Annual Environmental Monitoring Report
- IRA Completion Report
- Small Arms Ranges Revised Draft Completion of Work Report
- Northwest Corner Demonstration of Compliance Report Response to Comments
- J-2 Range, Phase-2, Addendum to Post-DD Confirmation Geophysical and Soil Investigation Findings Project Note Response to Comments
- KD Range Confirmatory Geophysical and Soil Completion for Work Report
- Demolition Area 1 Extraction Well Project Note

**TABLE 1**  
**Sampling Progress: 1 to 31 December 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 2	MW-161S	MW-161S_F21	N	12-13-2021	Ground Water	145.5	155.5
Demolition Area 2	MW-161S	MW-161S_F21D	FD	12-13-2021	Ground Water	145.5	155.5
Demolition Area 2	MW-380M2	MW-380M2_F21	N	12-13-2021	Ground Water	205.66	215.66
Demolition Area 2	MW-404M2	MW-404M2_F21	N	12-13-2021	Ground Water	200.04	210.04
Demolition Area 2	MW-572M1	MW-572M1_F21	N	12-13-2021	Ground Water	164.9	174.9
Demolition Area 2	MW-435M2	MW-435M2_F21	N	12-13-2021	Ground Water	149.57	159.93
Demolition Area 2	MW-435M1	MW-435M1_F21	N	12-13-2021	Ground Water	169.94	179.95
Demolition Area 2	MW-573M2	MW-573M2_F21	N	12-09-2021	Ground Water	155.4	165.4
Demolition Area 2	MW-573M1	MW-573M1_F21	N	12-09-2021	Ground Water	176.4	186.4
J1 Range Northern	MW-326M3	MW-326M3_F21	N	12-09-2021	Ground Water	165.24	175.26
J1 Range Northern	MW-326M2	MW-326M2_F21	N	12-09-2021	Ground Water	196.27	206.28
J1 Range Northern	MW-326M1	MW-326M1_F21	N	12-09-2021	Ground Water	250.01	260.01
J1 Range Southern	J1S-EFF	J1S-EFF-169A	N	12-08-2021	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-169A	N	12-08-2021	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-169A	N	12-08-2021	Process Water	0	0
J1 Range Northern	MW-346M4	MW-346M4_F21	N	12-08-2021	Ground Water	140	150
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-189A	N	12-08-2021	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-189A	N	12-08-2021	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-189A	N	12-08-2021	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-189A	N	12-08-2021	Process Water	0	0
J1 Range Northern	MW-346M3	MW-346M3_F21	N	12-08-2021	Ground Water	175	185
Demolition Area 1	D1LE-EFF	D1LE-EFF-65A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-65A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-65A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-65A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-137A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-137A	N	12-08-2021	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-137A	N	12-08-2021	Process Water	0	0
J1 Range Northern	MW-346M2	MW-346M2_F21	N	12-08-2021	Ground Water	205.28	215.28
J1 Range Northern	MW-346M2	MW-346M2_F21D	FD	12-08-2021	Ground Water	205.28	215.28
Demolition Area 1	D1-INF	D1-INF-137A	N	12-08-2021	Process Water	0	0
J1 Range Northern	MW-346M1	MW-346M1_F21	N	12-08-2021	Ground Water	245	255
J1 Range Northern	MW-346M1	MW-346M1_F21D	FD	12-08-2021	Ground Water	245	255
J1 Range Northern	MW-245M2	MW-245M2_F21	N	12-07-2021	Ground Water	204	214
J1 Range Northern	MW-245M2	MW-245M2_F21D	FD	12-07-2021	Ground Water	204	214
J1 Range Northern	MW-245M1	MW-245M1_F21	N	12-07-2021	Ground Water	244	254
J1 Range Northern	MW-370M3	MW-370M3_F21	N	12-07-2021	Ground Water	174.96	184.96
J3 Range	J3-EFF	J3-EFF-183A	N	12-07-2021	Process Water	0	0
J1 Range Northern	MW-370M2	MW-370M2_F21	N	12-07-2021	Ground Water	215.54	225.54
J3 Range	J3-MID-2	J3-MID-2-183A	N	12-07-2021	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-183A	N	12-07-2021	Process Water	0	0
J3 Range	J3-INF	J3-INF-183A	N	12-07-2021	Process Water	0	0
J1 Range Northern	MW-370M1	MW-370M1_F21	N	12-07-2021	Ground Water	245	255
J1 Range Northern	MW-370M1	MW-370M1_F21D	FD	12-07-2021	Ground Water	245	255
J1 Range Northern	MW-349M2	MW-349M2_F21	N	12-06-2021	Ground Water	195	205
J1 Range Northern	MW-349M1	MW-349M1_F21	N	12-06-2021	Ground Water	229	239
J1 Range Northern	MW-349M1	MW-349M1_F21D	FD	12-06-2021	Ground Water	229	239
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-183A	N	12-06-2021	Process Water	0	0
J1 Range Northern	MW-303M3	MW-303M3_F21	N	12-06-2021	Ground Water	139.74	149.69
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-183A	N	12-06-2021	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-183A	N	12-06-2021	Process Water	0	0
J1 Range Northern	MW-303M2	MW-303M2_F21	N	12-06-2021	Ground Water	235.09	245.1
J1 Range Northern	MW-303M2	MW-303M2_F21D	FD	12-06-2021	Ground Water	235.09	245.1
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-183A	N	12-06-2021	Process Water	0	0

N = Normal Sample  
FD = Field Duplicate

**TABLE 1**  
**Sampling Progress: 1 to 31 December 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 Northern	J2N-MID-1E	J2N-MID-1E-183A	N	12-06-2021	Process Water	0	0
J1 Range Northern	MW-303M1	MW-303M1_F21	N	12-06-2021	Ground Water	299.07	309.07
J1 Range Northern	J1N-EFF	J1N-EFF-98A	N	12-06-2021	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-98A	N	12-06-2021	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-98A	N	12-06-2021	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-98A	N	12-06-2021	Process Water	0	0
J1 Range Northern	MW-479M1	MW-479M1_F21	N	12-02-2021	Ground Water	240	250
J1 Range Northern	MW-590M2	MW-590M2_F21	N	12-02-2021	Ground Water	238	248
J1 Range Northern	MW-590M2	MW-590M2_F21D	FD	12-02-2021	Ground Water	238	248
Central Impact Area	CIA2-EFF	CIA2-EFF-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-95A	N	12-02-2021	Process Water	0	0
J1 Range Northern	MW-590M1	MW-590M1_F21	N	12-02-2021	Ground Water	258	268
Central Impact Area	CIA1-EFF	CIA1-EFF-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-95A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-95A	N	12-02-2021	Process Water	0	0
J1 Range Northern	MW-584M2	MW-584M2_F21	N	12-02-2021	Ground Water	228	238
Central Impact Area	CIA3-EFF	CIA3-EFF-66A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-66A	N	12-02-2021	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-66A	N	12-02-2021	Process Water	0	0
J1 Range Northern	MW-584M1	MW-584M1_F21	N	12-02-2021	Ground Water	248	258
Central Impact Area	CIA3-INF	CIA3-INF-66A	N	12-02-2021	Process Water	0	0
J1 Range Northern	MW-541M1	MW-541M1_F21	N	12-01-2021	Ground Water	210	220
J1 Range Northern	MW-401M3	MW-401M3_F21	N	12-01-2021	Ground Water	228.5	238.5
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-159A	N	12-01-2021	Process Water	0	0
J1 Range Northern	MW-401M1	MW-401M1_F21	N	12-01-2021	Ground Water	256.1	266.1
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-159A	N	12-01-2021	Process Water	0	0
J1 Range Northern	MW-430M2	MW-430M2_F21	N	12-01-2021	Ground Water	188.41	198.41
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-159A	N	12-01-2021	Process Water	0	0
J1 Range Northern	MW-430M1	MW-430M1_F21	N	12-01-2021	Ground Water	245.23	255.23
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-159A	N	12-01-2021	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-159A	N	12-01-2021	Process Water	0	0

**TABLE 2**  
**VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS**  
**Data Received December 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
J1 Range Southern	MW-669M1	MW-669M1_F21	223.7	233.7	11-09-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-669M1	MW-669M1_F21D	223.7	233.7	11-09-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.39	J	µg/L	0.60		0.062	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	1,3,5-Trinitrobenzene	0.15	J	µg/L	1090		0.065	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	2-Amino-4,6-dinitrotoluene	0.34		µg/L	7.3		0.072	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW6850	Perchlorate	0.90		µg/L	2.0		0.086	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.7	J	µg/L	0.60	X	0.062	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.13	J	µg/L	400		0.037	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	2,4,6-Trinitrotoluene	1.3		µg/L	2.0		0.12	0.20
Central Impact Area	MW-695S	MW-695S_F21	130	140	11-09-2021	SW8330	4-Amino-2,6-dinitrotoluene	0.46		µg/L	7.3		0.072	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	4-Amino-2,6-dinitrotoluene	0.48		µg/L	7.3		0.072	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.7	J	µg/L	0.60	X	0.062	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.14	J	µg/L	400		0.037	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	1,3,5-Trinitrobenzene	0.15	J	µg/L	1090		0.065	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	2-Amino-4,6-dinitrotoluene	0.35		µg/L	7.3		0.072	0.20
Central Impact Area	MW-695S	MW-695S_F21D	130	140	11-09-2021	SW8330	2,4,6-Trinitrotoluene	1.3		µg/L	2.0		0.12	0.20
J1 Range Southern	MW-480M2	MW-480M2_F21	143.57	153.57	11-05-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.064	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-481M2	MW-481M2_F21	146.28	156.28	11-05-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.084	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-482M2	MW-482M2_F21	172.64	182.64	11-05-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.064	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-360M2	MW-360M2_F21	102	112	11-04-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.13	J	µg/L	400		0.037	0.20
J1 Range Southern	MW-360M2	MW-360M2_F21	102	112	11-04-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.18	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-360M2	MW-360M2_F21D	102	112	11-04-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20	J	µg/L	0.60		0.062	0.20
J1 Range Southern	MW-360M2	MW-360M2_F21D	102	112	11-04-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	µg/L	400		0.037	0.20
J1 Range Southern	MW-645M2	MW-645M2_F21	143.5	153.5	11-01-2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.51		µg/L	400		0.037	0.20
J1 Range Southern	MW-645M2	MW-645M2_F21	143.5	153.5	11-01-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.0		µg/L	0.60	X	0.062	0.20
J1 Range Southern	MW-645M1	MW-645M1_F21	183.5	193.5	11-01-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.32		µg/L	0.60		0.062	0.20
J1 Range Southern	MW-645M1	MW-645M1_F21D	183.5	193.5	11-01-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.31		µg/L	0.60		0.062	0.20
J1 Range Southern	MW-402M1	MW-402M1_F21	190.14	200.13	11-01-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		µg/L	0.60		0.062	0.20
J1 Range Southern	MW-400M1	MW-400M1_F21	192.76	202.75	11-01-2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.082	J	µg/L	0.60		0.062	0.20

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

**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
<b>PFAS 21 Cmps</b>	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	<b>2.20</b>	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	<b>1.00 J</b>	1.50 U
Perfluorooctanesulfonamide (PFOSA)	2.70 U	2.80 U	2.90 U	3.00 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	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	<b>0.460 J</b>	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	<b>1.20 J</b>	1.50 U
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>3.20</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.86</b>	<b>0.00</b>

**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_PFA19	J1N-INF2_PFA19R	MW-136S_PFA19	MW-564M1_PFA19	MW-590M2_PFA19
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
<b>PFAS 21 Cmps</b>	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	<b>0.990 J</b>	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
Perfluorooctanesulfonamide (PFOSA)	<b>1.80 J</b>	2.90 U	2.90 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	<b>4.90</b>	2.90 U	<b>1.40 J</b>	2.80 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	<b>2.40</b>	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 (PFTTrDA)	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
<b>†PFOS + PFOA (EPA)</b>	<b>4.90</b>	<b>0.00</b>	<b>3.80</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>4.90</b>	<b>0.00</b>	<b>3.80</b>	<b>0.00</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>6.70</b>	<b>0.00</b>	<b>4.79</b>	<b>0.00</b>	<b>0.00</b>

**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
<b>PFAS 21 Cmps</b>	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	<b>1.40 J</b>
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.50 U	1.30 U	1.40 U	<b>0.450 J</b>
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	<b>0.880 J</b>	<b>0.730 J</b>	<b>0.650 J</b>
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.80 U	2.90 U	2.70 U	2.90 U	2.60 U
Perfluorooctanesulfonic acid (PFOS)	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 (PFTTrDA)	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	<b>4.90</b>
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.880</b>	<b>0.730</b>	<b>2.05</b>
<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.880</b>	<b>0.730</b>	<b>7.40</b>

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

	Location	MW-368M2	MW-667M1
	<b>Field Sample ID</b>	MW-368M2_PFAS19	MW-667M1_PFAS19
	<b>Sampling Depth</b>	202.73 - 212.73	302.30 - 312.30
	<b>Sampling Date</b>	06/18/2019	06/17/2019
	<b>SDG</b>	320514662	320514661
	<b>Sample Type</b>	<b>Normal</b>	<b>Normal</b>
<b>PFAS 21 Cmps</b>		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)		<b>0.800 J</b>	<b>4.30</b>
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	<b>2.80</b>
Perfluorooctanesulfonamide (PFOSA)		2.60 U	2.70 U
Perfluorooctanesulfonic acid (PFOS)		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)		<b>2.40</b>	<b>1.60 J</b>
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.800</b>	<b>7.10</b>
	<b>§Sum of All Compounds Collected</b>	<b>3.20</b>	<b>8.70</b>



**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
<b>PFAS 21 Cmps</b>	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	<b>1.40 J</b>
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	<b>0.370 J</b>	0.930 U	<b>0.400 J</b>	<b>0.500 J</b>	0.970 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	<b>1.00 J</b>	1.40 U	<b>0.940 J</b>	<b>1.00 J</b>	1.50 U
Perfluorohexane sulfonate (PFHxS)	0.960 U	<b>11.0</b>	0.930 U	<b>9.90</b>	<b>9.00</b>	1.90 U
Perfluorohexanoic acid (PFHxA)	0.960 U	<b>1.30 J</b>	0.930 U	<b>1.20 J</b>	<b>1.30 J</b>	<b>2.30</b>
Perfluorononanoic acid (PFNA)	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U	1.50 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.90 U	<b>1.30 J</b>	2.80 U	2.80 U	<b>1.10 J</b>	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	<b>1.50 J</b>	1.40 U	<b>1.70 J</b>	<b>1.50 J</b>	1.50 U
Perfluoropentanoic acid (PFPeA)	0.960 U	<b>0.910 J</b>	0.930 U	<b>0.840 J</b>	<b>1.00 J</b>	<b>1.20 J</b>
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	3.00 U	2.80 U	2.80 U	2.90 U	2.90 U
Perfluorotridecanoic acid (PFTTrDA)	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
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>2.80</b>	<b>0.00</b>	<b>1.70</b>	<b>2.60</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>14.8</b>	<b>0.00</b>	<b>12.5</b>	<b>12.6</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>17.4</b>	<b>0.00</b>	<b>15.0</b>	<b>15.4</b>	<b>4.90</b>

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

	Location	MW-234M2	MW-313M1	MW-587M2
	<b>Field Sample ID</b>	MW-234M2_PFAS19	MW-313M1_PFAS19	MW-587M2_PFAS19
	<b>Sampling Depth</b>	110.00 - 120.00	255.40 - 265.40	220.00 - 230.00
	<b>Sampling Date</b>	06/17/2019	06/19/2019	06/19/2019
	<b>SDG</b>	320514661	320515981	320515981
	<b>Sample Type</b>	<b>Normal</b>	<b>Normal</b>	<b>Normal</b>
<b>PFAS 21 Cmps</b>		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	<b>0.700 J</b>	1.50 U
Perfluorodecanesulfonic acid (PFDS)		1.30 U	1.50 U	1.50 U
Perfluorodecanoic acid (PFDA)		0.880 U	<b>1.20 J</b>	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)		<b>0.600 J</b>	0.980 U	0.970 U
Perfluorohexanoic acid (PFHxA)		0.880 U	0.980 U	0.970 U
Perfluorononanoic acid (PFNA)		1.30 U	<b>1.10 J</b>	1.50 U
Perfluorooctanesulfonamide (PFOSA)		2.60 U	2.90 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)		<b>1.90 J</b>	2.90 U	2.90 U
Perfluorooctanoic acid (PFOA)		<b>0.550 J</b>	1.50 U	1.50 U
Perfluoropentanoic acid (PFPeA)		0.880 U	<b>0.680 J</b>	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	<b>1.40 J</b>	1.50 U
	<b>†PFOS + PFOA (EPA)</b>	<b>2.45</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>3.05</b>	<b>2.30</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>3.05</b>	<b>5.08</b>	<b>0.00</b>

**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
<b>PFAS 21 Cmps</b>	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	<b>0.560 J</b>	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)	<b>1.70 J</b>	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)	<b>1.50 J</b>	<b>1.50 J</b>	<b>0.690 J</b>	<b>0.610 J</b>	1.90 U	<b>0.540 J</b>
Perfluorohexanoic acid (PFHxA)	0.940 U	0.920 U	<b>0.410 J</b>	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
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.60 U	2.60 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	<b>12.0</b>	<b>12.0</b>	<b>12.0</b>	2.90 U
Perfluorooctanoic acid (PFOA)	<b>0.520 J</b>	1.40 U	<b>1.70</b>	<b>1.60 J</b>	<b>1.30 J</b>	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 (PFTTrDA)	<b>1.40 J</b>	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
<b>†PFOS + PFOA (EPA)</b>	<b>0.520</b>	<b>0.00</b>	<b>13.7</b>	<b>13.6</b>	<b>13.3</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>2.02</b>	<b>1.50</b>	<b>14.4</b>	<b>14.2</b>	<b>13.3</b>	<b>0.540</b>
<b>§Sum of All Compounds Collected</b>	<b>5.12</b>	<b>1.50</b>	<b>14.8</b>	<b>14.2</b>	<b>13.9</b>	<b>0.540</b>

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

<b>Location</b>	MW-250M2
<b>Field Sample ID</b>	MW-250M2_PFAS19
<b>Sampling Depth</b>	145.00 - 155.00
<b>Sampling Date</b>	06/20/2019
<b>SDG</b>	320515981
<b>Sample Type</b>	<b>Normal</b>
<b>PFAS 21 Cmps</b>	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)	<b>0.710 J</b>
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
Perfluorooctanesulfonamide (PFOSA)	2.90 U
Perfluorooctanesulfonic acid (PFOS)	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
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>0.710</b>

**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
<b>PFAS 21 Cmps</b>		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	<b>15.0 J</b>	9.30 U	9.30 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.60 U	9.20 U	<b>2.90 J</b>	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)		<b>0.920 J</b>	<b>0.670 J</b>	1.50 U	1.40 U	<b>4.00</b>	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	<b>0.700 J</b>
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	<b>1.70 J</b>
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	<b>0.700 J</b>	1.40 U
Perfluorohexane sulfonate (PFHxS)		<b>0.360 J</b>	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	<b>0.850 J</b>	0.950 U
Perfluorononanoic acid (PFNA)		1.40 U	1.40 U	1.50 U	1.40 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)		2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)		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	<b>4.00</b>	<b>0.410 J</b>
Perfluorotetradecanoic acid (PFTeDA)		2.90 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTTrDA)		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	<b>2.80</b>
	<b>+PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>#PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.360</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.700</b>	<b>0.700</b>
	<b>§Sum of All Compounds Collected</b>	<b>1.28</b>	<b>0.670</b>	<b>17.9</b>	<b>0.00</b>	<b>9.55</b>	<b>5.61</b>

**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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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)	<b>0.920 J</b>	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)	<b>1.60 J</b>	<b>0.950 J</b>	<b>5.40</b>	<b>3.50</b>	<b>2.50</b>	<b>2.40</b>	
Perfluorododecanoic acid (PFDoA)	1.30 U	1.50 U	<b>1.20 J</b>	<b>0.600 J</b>	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)	<b>2.60</b>	<b>1.50 J</b>	<b>1.40 J</b>	<b>2.70</b>	<b>3.40</b>	<b>3.50</b>	
Perfluorooctanesulfonamide (PFOSA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluorooctanesulfonic acid (PFOS)	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	<b>0.440 J</b>	1.00 U	0.950 U	<b>0.620 J</b>	<b>0.870 J</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluorotridecanoic acid (PFTTrDA)	2.70 U	3.00 U	3.00 U	2.90 U	2.90 U	2.80 U	
Perfluoroundecanoic acid (PFUnA)	1.30 U	<b>1.00 J</b>	<b>13.0</b>	<b>6.90</b>	<b>5.90</b>	<b>2.50</b>	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>4.20</b>	<b>2.45</b>	<b>6.80</b>	<b>6.20</b>	<b>5.90</b>	<b>5.90</b>
	<b>§Sum of All Compounds Collected</b>	<b>5.12</b>	<b>3.89</b>	<b>21.0</b>	<b>13.7</b>	<b>12.4</b>	<b>9.27</b>

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 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
<b>PFAS 21 Cmps</b>		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)		<b>0.730 J</b>	<b>1.70 J</b>	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)		<b>2.20</b>	<b>0.650 J</b>	1.40 U
Perfluorooctanesulfonamide (PFOSA)		2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)		<b>0.750 J</b>	<b>0.410 J</b>	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)		<b>1.00 J</b>	<b>6.00</b>	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>2.93</b>	<b>2.35</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>4.68</b>	<b>8.76</b>	<b>0.00</b>

**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
<b>PFAS 21 Cmps</b>	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	<b>3.40</b>	<b>3.60</b>
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	<b>4.90</b>	<b>4.50</b>
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.40 U	1.50 U	<b>3.50</b>	<b>3.60</b>
Perfluoroheptanesulfonic acid (PFHpS)	0.990 U	0.950 U	0.940 U	0.970 U	0.920 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	<b>0.930 J</b>	<b>0.910 J</b>	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	<b>9.80</b>	<b>9.30</b>	0.940 U	0.970 U	0.920 U	0.950 U
Perfluorohexanoic acid (PFHxA)	<b>1.10 J</b>	<b>1.10 J</b>	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	<b>2.00</b>	<b>1.50 J</b>
Perfluorooctanesulfonamide (PFOSA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	<b>1.70 J</b>	<b>1.70 J</b>	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	<b>1.10 J</b>	<b>1.20 J</b>	0.940 U	0.970 U	<b>0.460 J</b>	<b>0.410 J</b>
Perfluorotetradecanoic acid (PFTeDA)	3.00 U	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)	3.00 U	2.80 U	2.80 U	2.90 U	<b>1.50 J</b>	<b>1.90 J</b>
Perfluoroundecanoic acid (PFUnA)	1.50 U	1.40 U	1.40 U	1.50 U	<b>25.0</b>	<b>28.0</b>
<b>†PFOS + PFOA (EPA)</b>	<b>1.70</b>	<b>1.70</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>12.4</b>	<b>11.9</b>	<b>0.00</b>	<b>0.00</b>	<b>6.90</b>	<b>6.00</b>
<b>§Sum of All Compounds Collected</b>	<b>14.6</b>	<b>14.2</b>	<b>0.00</b>	<b>0.00</b>	<b>40.8</b>	<b>43.5</b>



**PFAS Summary Report – Groundwater**  
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 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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	<b>0.550 J</b>	1.40 U	1.40 U	<b>1.00 J</b>	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorodecanoic acid (PFDA)	<b>3.10</b>	<b>3.60</b>	<b>1.50 J</b>	<b>2.80</b>	<b>2.40</b>	<b>2.50</b>	
Perfluorododecanoic acid (PFDoA)	<b>0.800 J</b>	<b>1.10 J</b>	<b>0.610 J</b>	<b>1.70 J</b>	1.40 U	<b>2.20</b>	
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)	<b>3.90</b>	<b>2.30</b>	<b>0.960 J</b>	<b>1.00 J</b>	<b>1.40 J</b>	1.50 U	
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluorooctanesulfonic acid (PFOS)	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)	<b>0.580 J</b>	<b>0.430 J</b>	0.940 U	<b>1.40 J</b>	0.910 U	<b>1.20 J</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.70 U	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	2.90 U	<b>0.880 J</b>	2.80 U	2.80 U	2.70 U	2.90 U	
Perfluoroundecanoic acid (PFUnA)	<b>8.50</b>	<b>9.20</b>	<b>4.80</b>	<b>22.0</b>	<b>1.40 J</b>	<b>8.10</b>	
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>7.00</b>	<b>5.90</b>	<b>2.46</b>	<b>3.80</b>	<b>3.80</b>	<b>2.50</b>	
<b>§Sum of All Compounds Collected</b>	<b>16.9</b>	<b>17.5</b>	<b>8.42</b>	<b>28.9</b>	<b>5.20</b>	<b>15.0</b>	

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 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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	<b>3.60</b>	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	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U	
Perfluorooctanesulfonic acid (PFOS)	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	<b>0.600 J</b>	
Perfluoropentanoic acid (PFPeA)	<b>0.490 J</b>	<b>0.490 J</b>	0.940 U	<b>0.420 J</b>	0.920 U	<b>0.600 J</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.70 U	
Perfluorotridecanoic acid (PFTTrDA)	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	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.600</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.600</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.490</b>	<b>0.490</b>	<b>0.00</b>	<b>0.420</b>	<b>3.60</b>	<b>1.20</b>

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**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
<b>PFAS 21 Cmps</b>	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
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	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	<b>0.440 J</b>	0.940 U	<b>0.400 J</b>	0.940 U	<b>0.420 J</b>
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	2.80 U	2.80 U	2.80 U	2.90 U
Perfluorotridecanoic acid (PFTTrDA)	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
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.440</b>	<b>0.00</b>	<b>0.400</b>	<b>0.00</b>	<b>0.420</b>

**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
<b>PFAS 21 Cmps</b>	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)	<b>8.50</b>	0.940 U	0.900 U	0.960 U	0.940 U	0.930 U
Perfluorobutanoic acid (PFBA)	<b>1.70 J</b>	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	<b>0.360 J</b>	0.930 U
Perfluorohexanoic acid (PFHxA)	<b>5.40</b>	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
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	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)	<b>1.90</b>	<b>0.450 J</b>	0.900 U	0.960 U	<b>0.630 J</b>	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
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.360</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>17.5</b>	<b>0.450</b>	<b>0.00</b>	<b>0.00</b>	<b>0.990</b>	<b>0.00</b>

**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
<b>PFAS 21 Cmps</b>		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	<b>1.40 J</b>	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)		<b>3.20</b>	<b>1.60 J</b>	<b>1.50 J</b>	<b>1.90</b>
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)		<b>1.80</b>	<b>0.900 J</b>	1.50 U	<b>0.890 J</b>
Perfluorooctanesulfonamide (PFOSA)		<b>1.30 J</b>	<b>2.20 J</b>	2.90 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		2.70 U	2.70 U	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluoropentanoic acid (PFPeA)		<b>0.650 J</b>	<b>0.830 J</b>	<b>1.10 J</b>	<b>0.400 J</b>
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)		<b>0.650 J</b>	1.40 U	<b>1.00 J</b>	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>5.00</b>	<b>2.50</b>	<b>1.50</b>	<b>2.79</b>
	<b>§Sum of All Compounds Collected</b>	<b>7.60</b>	<b>5.53</b>	<b>5.00</b>	<b>3.19</b>

**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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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)	<b>1.20 J</b>	<b>0.620 J</b>	0.970 U	0.980 U	0.940 U	0.960 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	<b>1.00 J</b>	<b>1.00 J</b>	1.40 U	<b>0.570 J</b>	
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)	<b>26.0</b>	<b>4.20</b>	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	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	<b>4.90</b>	<b>5.00</b>	<b>16.0</b>	2.90 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	<b>0.840 J</b>	<b>0.940 J</b>	<b>0.510 J</b>	1.40 U	
Perfluoropentanoic acid (PFPeA)	0.940 U	0.950 U	0.970 U	<b>0.460 J</b>	0.940 U	<b>0.490 J</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.90 U	2.90 U	2.80 U	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	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	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>5.74</b>	<b>5.94</b>	<b>16.5</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>26.0</b>	<b>4.20</b>	<b>5.74</b>	<b>5.94</b>	<b>16.5</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>27.2</b>	<b>4.82</b>	<b>6.74</b>	<b>7.40</b>	<b>16.5</b>	<b>1.06</b>

**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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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)	<b>2.20</b>	0.920 U	0.900 U	0.940 U	<b>1.80 J</b>	0.920 U	
Perfluorobutanoic acid (PFBA)	<b>1.20 J</b>	1.80 U	1.80 U	1.40 U	<b>4.90</b>	<b>1.40 J</b>	
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	<b>0.550 J</b>	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	<b>4.00</b>	1.40 U	
Perfluorohexane sulfonate (PFHxS)	<b>19.0</b>	<b>1.00 J</b>	0.900 U	1.90 U	<b>37.0</b>	1.80 U	
Perfluorohexanoic acid (PFHxA)	<b>0.830 J</b>	<b>0.950 J</b>	<b>0.510 J</b>	0.940 U	<b>8.40</b>	<b>0.450 J</b>	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	1.40 U	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	2.80 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	<b>1.10 J</b>	<b>3.80</b>	2.80 U	<b>10.0</b>	2.80 U	
Perfluorooctanoic acid (PFOA)	1.40 U	<b>2.10</b>	<b>1.10 J</b>	<b>0.550 J</b>	<b>3.10</b>	<b>1.10 J</b>	
Perfluoropentanoic acid (PFPeA)	<b>1.30 J</b>	<b>0.660 J</b>	<b>0.440 J</b>	<b>0.400 J</b>	<b>6.50</b>	<b>0.440 J</b>	
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	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>3.20</b>	<b>4.90</b>	<b>0.550</b>	<b>13.1</b>	<b>1.10</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>19.0</b>	<b>4.75</b>	<b>4.90</b>	<b>0.550</b>	<b>54.1</b>	<b>1.10</b>
	<b>§Sum of All Compounds Collected</b>	<b>24.5</b>	<b>6.36</b>	<b>5.85</b>	<b>0.950</b>	<b>75.7</b>	<b>3.39</b>

**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
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	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	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	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	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U	0.950 U
Perfluorobutanoic acid (PFBA)	<b>1.50 J</b>	1.40 U	<b>0.740 J</b>	<b>0.740 J</b>	<b>6.50</b>	<b>2.20</b>	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	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	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	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	0.950 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	<b>1.80 J</b>	1.40 U	
Perfluorohexane sulfonate (PFHxS)	1.80 U	0.950 U	0.950 U	1.90 U	<b>4.40</b>	0.950 U	
Perfluorohexanoic acid (PFHxA)	0.920 U	0.950 U	0.950 U	0.950 U	<b>3.70</b>	0.950 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U	
Perfluorooctanesulfonic acid (PFOS)	<b>1.00 J</b>	2.80 U	2.90 U	2.80 U	<b>2.30 J</b>	2.90 U	
Perfluorooctanoic acid (PFOA)	<b>0.990 J</b>	1.40 U	1.40 U	1.40 U	<b>2.30</b>	<b>0.640 J</b>	
Perfluoropentanoic acid (PFPeA)	<b>0.430 J</b>	<b>0.460 J</b>	0.950 U	0.950 U	<b>2.80</b>	<b>0.420 J</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.90 U	2.80 U	2.80 U	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	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	
	<b>‡PFOS + PFOA (EPA)</b>	<b>1.99</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.60</b>	<b>0.640</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>1.99</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>10.8</b>	<b>0.640</b>
	<b>§Sum of All Compounds Collected</b>	<b>3.92</b>	<b>0.460</b>	<b>0.740</b>	<b>0.740</b>	<b>23.8</b>	<b>3.26</b>



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

	Location	MW-232M2	MW-30
	<b>Field Sample ID</b>	MW-232M2_F20	MW-30_F20
	<b>Sampling Depth</b>	61.00 - 66.00	26.00 - 36.00
	<b>Sampling Date</b>	07/16/2020	07/21/2020
	<b>SDG</b>	320627321	320629171
	<b>Sample Type</b>	<b>Normal</b>	<b>Normal</b>
<b>PFAS 21 Cmps</b>		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)		<b>3.20</b>	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
Perfluorooctanesulfonamide (PFOSA)		3.00 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		3.00 U	<b>15.0</b>
Perfluorooctanoic acid (PFOA)		<b>1.10 J</b>	<b>0.790 J</b>
Perfluoropentanoic acid (PFPeA)		<b>0.520 J</b>	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
	<b>†PFOS + PFOA (EPA)</b>	<b>1.10</b>	<b>15.8</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>1.10</b>	<b>15.8</b>
	<b>§Sum of All Compounds Collected</b>	<b>4.82</b>	<b>15.8</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
KGS 2021 J2 North SPM Fall  
J2 Range Northern

Location	J2EW0002	J2EW0002	J2EW2-MW2-B	J2EW2-MW2-C	MW-293M2	MW-293M2
Field Sample ID	J2EW0002_F21	J2EW0002_F21D	J2EW2-MW2-B_F21	J2EW2-MW2-C_F21	MW-293M2_F21	MW-293M2_F21D
Sampling Depth	198.00 - 233.00	198.00 - 233.00	209.79 - 219.79	243.83 - 253.81	0.00 - 0.00	0.00 - 0.00
Sampling Date	09/27/2021	09/27/2021	09/15/2021	09/15/2021	09/08/2021	09/08/2021
SDG	320796651	320796651	320791141	320791141	320787611	320787611
Sample Type	Normal	Field Duplicate	Normal	Normal	Normal	Field Duplicate
<b>PFAS 21 Cmps</b>	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)	<b>6.70 J</b>	<b>6.70 J</b>	19.0 U	20.0 U	18.0 U	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.00 U	9.50 U	10.0 U	9.20 U	8.90 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.00 U	9.50 U	10.0 U	9.20 U	8.90 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.00 U	9.50 U	10.0 U	9.20 U	8.90 U
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.900 U	0.950 U	1.00 U	<b>3.90</b>	<b>3.80</b>
Perfluorobutanoic acid (PFBA)	1.40 U	1.30 U	1.40 U	1.50 U	<b>0.840 J</b>	<b>1.10 J</b>
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.30 U	1.40 U	1.50 U	1.40 U	1.30 U
Perfluorodecanoic acid (PFDA)	0.940 U	0.900 U	0.950 U	1.00 U	<b>3.20</b>	<b>2.80</b>
Perfluorododecanoic acid (PFDoA)	1.40 U	1.30 U	1.40 U	1.50 U	<b>2.40</b>	<b>2.30</b>
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.900 U	0.950 U	1.00 U	0.920 U	0.890 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	<b>0.550 J</b>	1.40 U	1.50 U	1.40 U	1.30 U
Perfluorohexane sulfonate (PFHxS)	<b>8.10</b>	<b>7.70</b>	0.950 U	1.00 U	0.920 U	0.890 U
Perfluorohexanoic acid (PFHxA)	<b>0.820 J</b>	<b>0.770 J</b>	0.950 U	1.00 U	<b>1.30 J</b>	<b>1.10 J</b>
Perfluorononanoic acid (PFNA)	1.40 U	1.30 U	1.40 U	1.50 U	<b>1.30 J</b>	<b>1.10 J</b>
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.70 U	2.90 U	3.10 U	2.80 U	2.70 U
Perfluorooctanesulfonic acid (PFOS)	<b>1.30 J</b>	<b>1.10 J</b>	2.90 U	3.10 U	2.80 U	2.70 U
Perfluorooctanoic acid (PFOA)	<b>1.80 J</b>	<b>1.20 J</b>	1.40 U	1.50 U	1.40 U	1.30 U
Perfluoropentanoic acid (PFPeA)	<b>0.680 J</b>	<b>0.640 J</b>	0.950 U	1.00 U	<b>1.10 J</b>	<b>1.00 J</b>
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.70 U	2.90 U	3.10 U	2.80 U	2.70 U
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.70 U	2.90 U	3.10 U	<b>0.760 J</b>	2.70 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.30 U	1.40 U	1.50 U	<b>23.0</b>	<b>22.0</b>
<b>†PFOS + PFOA (EPA)</b>	<b>3.10</b>	<b>2.30</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>11.2</b>	<b>10.6</b>	<b>0.00</b>	<b>0.00</b>	<b>4.50</b>	<b>3.90</b>
<b>§Sum of All Compounds Collected</b>	<b>19.4</b>	<b>18.7</b>	<b>0.00</b>	<b>0.00</b>	<b>37.8</b>	<b>35.2</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-300M1	MW-300M1	MW-300M2	MW-300M3	MW-302M2	MW-302M2
	Field Sample ID	MW-300M1_F21	MW-300M1_F21D	MW-300M2_F21	MW-300M3_F21	MW-302M2_F21	MW-302M2_F21D
	Sampling Depth	293.03 - 303.02	293.03 - 303.02	197.23 - 207.23	135.31 - 145.31	194.35 - 204.43	194.35 - 204.43
	Sampling Date	09/21/2021	09/21/2021	09/21/2021	09/21/2021	09/13/2021	09/13/2021
	SDG	320793351	320793351	320793351	320793351	320790821	320790821
	Sample Type	Normal	Field Duplicate	Normal	Normal	Normal	Field Duplicate
<b>PFAS 21 Cmps</b>		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)		9.70 U	9.60 U	9.30 U	9.50 U	9.60 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.70 U	9.60 U	9.30 U	9.50 U	9.60 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.70 U	9.60 U	9.30 U	9.50 U	9.60 U	9.40 U
Perfluorobutanesulfonic acid (PFBS)		0.970 U	0.960 U	0.930 U	0.950 U	0.960 U	0.940 U
Perfluorobutanoic acid (PFBA)		1.50 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.50 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)		<b>3.40</b>	<b>3.60</b>	<b>4.00</b>	<b>1.70 J</b>	<b>2.60</b>	<b>2.50</b>
Perfluorododecanoic acid (PFDoA)		<b>0.520 J</b>	<b>0.680 J</b>	<b>1.10 J</b>	<b>0.710 J</b>	<b>2.80</b>	<b>3.00</b>
Perfluoroheptanesulfonic acid (PFHpS)		0.970 U	0.960 U	0.930 U	0.950 U	0.960 U	0.940 U
Perfluoroheptanoic acid (PFHpA)		1.50 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)		0.970 U	0.960 U	0.930 U	<b>0.440 J</b>	0.960 U	0.940 U
Perfluorohexanoic acid (PFHxA)		0.970 U	0.960 U	0.930 U	0.950 U	0.960 U	0.940 U
Perfluorononanoic acid (PFNA)		<b>4.80</b>	<b>4.80</b>	<b>3.60</b>	<b>2.10</b>	1.40 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)		2.90 U	2.90 U	2.80 U	2.90 U	2.90 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		2.90 U	2.90 U	2.80 U	2.90 U	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.50 U	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)		0.970 U	0.960 U	0.930 U	0.950 U	0.960 U	0.940 U
Perfluorotetradecanoic acid (PFTeDA)		2.90 U	2.90 U	2.80 U	2.90 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.90 U	2.90 U	<b>0.700 J</b>	<b>0.840 J</b>	<b>1.10 J</b>	<b>1.20 J</b>
Perfluoroundecanoic acid (PFUnA)		<b>8.30</b>	<b>8.60</b>	<b>7.80</b>	<b>4.40</b>	<b>27.0</b>	<b>27.0</b>
	<b>+PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>#PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>8.20</b>	<b>8.40</b>	<b>7.60</b>	<b>4.24</b>	<b>2.60</b>	<b>2.50</b>
	<b>§Sum of All Compounds Collected</b>	<b>17.0</b>	<b>17.7</b>	<b>17.2</b>	<b>10.2</b>	<b>33.5</b>	<b>33.7</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-305M1	MW-330M1	MW-330M2	MW-330M3	MW-340D	MW-340M1
	Field Sample ID	MW-305M1_F21	MW-330M1_F21	MW-330M2_F21	MW-330M3_F21	MW-340D_F21	MW-340M1_F21
	Sampling Depth	202.82 - 212.82	313.10 - 323.13	238.01 - 248.04	154.97 - 164.99	0.00 - 0.00	0.00 - 0.00
	Sampling Date	09/14/2021	09/17/2021	09/17/2021	09/17/2021	09/23/2021	09/23/2021
	SDG	320790821	320791141	320791141	320791141	320793861	320793861
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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)	9.70 U	9.60 U	9.70 U	9.90 U	9.50 U	9.60 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.70 U	9.60 U	9.70 U	9.90 U	9.50 U	9.60 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.70 U	9.60 U	9.70 U	9.90 U	9.50 U	9.60 U	
Perfluorobutanesulfonic acid (PFBS)	0.970 U	0.960 U	0.970 U	0.990 U	0.950 U	0.960 U	
Perfluorobutanoic acid (PFBA)	1.50 U	<b>1.60 J</b>	<b>0.890 J</b>	1.50 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	<b>3.60</b>	<b>38.0</b>	<b>8.90</b>	<b>19.0</b>	<b>18.0</b>	<b>2.30</b>	
Perfluorododecanoic acid (PFDoA)	1.50 U	<b>2.50</b>	<b>2.20</b>	<b>0.810 J</b>	<b>1.80 J</b>	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.970 U	0.960 U	0.970 U	0.990 U	0.950 U	0.960 U	
Perfluoroheptanoic acid (PFHpA)	1.50 U	<b>1.10 J</b>	1.50 U	1.50 U	1.40 U	1.40 U	
Perfluorohexane sulfonate (PFHxS)	0.970 U	0.960 U	0.970 U	0.990 U	0.950 U	0.960 U	
Perfluorohexanoic acid (PFHxA)	0.970 U	<b>0.770 J</b>	0.970 U	0.990 U	0.950 U	0.960 U	
Perfluorononanoic acid (PFNA)	<b>2.20</b>	<b>16.0</b>	<b>12.0</b>	<b>25.0</b>	<b>14.0</b>	<b>1.60 J</b>	
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.90 U	2.90 U	3.00 U	2.80 U	2.90 U	
Perfluorooctanesulfonic acid (PFOS)	2.90 U	2.90 U	2.90 U	3.00 U	2.80 U	2.90 U	
Perfluorooctanoic acid (PFOA)	1.50 U	<b>0.660 J</b>	<b>0.650 J</b>	1.50 U	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPeA)	0.970 U	<b>2.50</b>	<b>1.20 J</b>	0.990 U	0.950 U	0.960 U	
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	<b>1.10 J</b>	2.90 U	3.00 U	<b>0.840 J</b>	2.90 U	
Perfluorotridecanoic acid (PFTTrDA)	2.90 U	<b>1.60 J</b>	<b>2.10 J</b>	3.00 U	<b>1.20 J</b>	2.90 U	
Perfluoroundecanoic acid (PFUnA)	<b>3.30</b>	<b>23.0</b>	<b>9.60</b>	<b>8.90</b>	<b>18.0</b>	<b>1.50 J</b>	
<b>+PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.660</b>	<b>0.650</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	
<b>#PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>5.80</b>	<b>55.8</b>	<b>21.6</b>	<b>44.0</b>	<b>32.0</b>	<b>3.90</b>	
<b>§Sum of All Compounds Collected</b>	<b>9.10</b>	<b>88.8</b>	<b>37.5</b>	<b>53.7</b>	<b>53.8</b>	<b>5.40</b>	

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-340M2	MW-345M1	MW-345M2	MW-348M2	MW-586M1	MW-586M2
	Field Sample ID	MW-340M2_F21	MW-345M1_F21	MW-345M2_F21	MW-348M2_F21	MW-586M1_F21	MW-586M2_F21
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	206.54 - 216.54	237.00 - 247.00	211.00 - 221.00
	Sampling Date	09/23/2021	09/20/2021	09/20/2021	09/07/2021	09/09/2021	09/09/2021
	SDG	320793861	320793351	320793351	320787611	320787751	320787751
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	20.0 U	18.0 U	19.0 U	18.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.50 U	9.20 U	9.90 U	8.90 U	9.30 U	9.10 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.50 U	9.20 U	9.90 U	8.90 U	9.30 U	9.10 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.50 U	9.20 U	9.90 U	8.90 U	9.30 U	9.10 U	
Perfluorobutanesulfonic acid (PFBS)	0.950 U	0.920 U	0.990 U	0.890 U	0.930 U	0.910 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	<b>0.790 J</b>	1.30 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.50 U	1.30 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	<b>1.60 J</b>	<b>56.0</b>	<b>2.90</b>	<b>2.40</b>	0.930 U	0.910 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	<b>3.40</b>	<b>0.760 J</b>	<b>2.40</b>	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.950 U	0.920 U	0.990 U	0.890 U	0.930 U	0.910 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	<b>0.910 J</b>	1.50 U	1.30 U	1.40 U	1.40 U	
Perfluorohexane sulfonate (PFHxS)	0.950 U	<b>0.410 J</b>	<b>0.810 J</b>	0.890 U	0.930 U	0.910 U	
Perfluorohexanoic acid (PFHxA)	0.950 U	0.920 U	0.990 U	0.890 U	0.930 U	0.910 U	
Perfluorononanoic acid (PFNA)	<b>4.00</b>	<b>14.0</b>	<b>6.80</b>	1.30 U	1.40 U	1.40 U	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.70 U	3.00 U	2.70 U	2.80 U	2.70 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.70 U	<b>1.20 J</b>	2.70 U	2.80 U	2.70 U	
Perfluorooctanoic acid (PFOA)	1.40 U	<b>1.10 J</b>	<b>0.580 J</b>	1.30 U	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPeA)	0.950 U	<b>0.480 J</b>	<b>0.960 J</b>	0.890 U	0.930 U	0.910 U	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	<b>0.930 J</b>	3.00 U	2.70 U	2.80 U	2.70 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	<b>1.80 J</b>	<b>0.840 J</b>	<b>0.740 J</b>	2.80 U	2.70 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	<b>32.0</b>	<b>3.60</b>	<b>8.70</b>	1.40 U	1.40 U	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>1.10</b>	<b>1.78</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>5.60</b>	<b>72.4</b>	<b>12.3</b>	<b>2.40</b>	<b>0.00</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>5.60</b>	<b>111</b>	<b>19.2</b>	<b>14.2</b>	<b>0.00</b>	<b>0.00</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-587M1	MW-588M1	MW-588M2	MW-589M1	MW-589M2	MW-612M1
	Field Sample ID	MW-587M1_F21	MW-588M1_F21	MW-588M2_F21	MW-589M1_F21	MW-589M2_F21	MW-612M1_F21
	Sampling Depth	250.00 - 260.00	238.00 - 248.00	198.00 - 208.00	240.00 - 250.00	211.00 - 221.00	297.00 - 307.00
	Sampling Date	08/24/2021	09/08/2021	09/08/2021	09/09/2021	09/09/2021	09/14/2021
	SDG	320781081	320787611	320787611	320787751	320787751	320790821
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	20.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.20 U	9.30 U	9.10 U	9.40 U	9.40 U	9.80 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.30 U	9.10 U	9.40 U	9.40 U	9.80 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.30 U	9.10 U	9.40 U	9.40 U	9.80 U	
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.930 U	<b>1.70 J</b>	0.940 U	0.940 U	0.980 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorodecanoic acid (PFDA)	0.920 U	0.930 U	0.910 U	0.940 U	0.940 U	0.980 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.930 U	0.910 U	0.940 U	0.940 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)	0.920 U	0.930 U	0.910 U	0.940 U	0.940 U	0.980 U	
Perfluorohexanoic acid (PFHxA)	0.920 U	0.930 U	0.910 U	0.940 U	0.940 U	0.980 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	<b>0.570 J</b>	1.40 U	1.50 U	
Perfluoropentanoic acid (PFPeA)	0.920 U	0.930 U	0.910 U	0.940 U	0.940 U	0.980 U	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.570</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.570</b>	<b>0.00</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>1.70</b>	<b>0.570</b>	<b>0.00</b>	<b>0.00</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
KGS 2021 J2 North SPM Fall  
J2 Range Northern

Location	MW-612M2	MW-613M1	MW-613M2	MW-621M1	MW-621M2	MW-622M1
Field Sample ID	MW-612M2_F21	MW-613M1_F21	MW-613M2_F21	MW-621M1_F21	MW-621M2_F21	MW-622M1_F21
Sampling Depth	267.00 - 277.00	267.10 - 277.10	246.10 - 256.10	249.40 - 259.40	219.40 - 229.40	245.40 - 255.40
Sampling Date	09/14/2021	09/17/2021	09/17/2021	09/08/2021	09/08/2021	09/13/2021
SDG	320790821	320791141	320791141	320787611	320787611	320790821
Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	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	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.30 U	9.40 U	9.40 U	9.30 U	8.90 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.30 U	9.40 U	9.40 U	9.30 U	8.90 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.30 U	9.40 U	9.40 U	9.30 U	8.90 U	9.40 U
Perfluorobutanesulfonic acid (PFBS)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluorohexanoic acid (PFHxA)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.930 U	0.940 U	0.940 U	0.930 U	0.890 U	0.940 U
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.80 U	2.80 U	2.80 U	2.70 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U
<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-622M2	MW-631M1	MW-631M2	MW-632M1	MW-632M2	MW-640M1
	Field Sample ID	MW-622M2_F21	MW-631M1_F21	MW-631M2_F21	MW-632M1_F21	MW-632M2_F21	MW-640M1_F21
	Sampling Depth	220.40 - 230.40	233.10 - 243.10	200.10 - 210.10	254.50 - 264.50	229.50 - 239.50	246.00 - 256.00
	Sampling Date	09/13/2021	08/23/2021	08/23/2021	09/07/2021	09/07/2021	09/07/2021
	SDG	320790821	320781081	320781081	320787611	320787611	320787611
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	18.0 U	18.0 U	18.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.60 U	8.80 U	9.00 U	9.00 U	9.00 U	9.00 U	9.60 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.60 U	8.80 U	9.00 U	9.00 U	9.00 U	9.00 U	9.60 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.60 U	8.80 U	9.00 U	9.00 U	9.00 U	9.00 U	9.60 U
Perfluorobutanesulfonic acid (PFBS)	0.960 U	0.880 U	<b>12.0</b>	0.900 U	0.900 U	0.900 U	0.960 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.30 U	<b>2.80</b>	1.40 U	1.30 U	1.30 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.960 U	0.880 U	0.900 U	0.900 U	0.900 U	0.900 U	0.960 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.960 U	0.880 U	0.900 U	0.900 U	0.900 U	0.900 U	0.960 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	0.960 U	0.880 U	0.900 U	0.900 U	0.900 U	0.900 U	0.960 U
Perfluorohexanoic acid (PFHxA)	0.960 U	0.880 U	<b>23.0</b>	0.900 U	0.900 U	0.900 U	0.960 U
Perfluorononanoic acid (PFNA)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)	2.90 U	2.60 U	2.70 U	2.70 U	2.70 U	2.70 U	2.90 U
Perfluorooctanesulfonic acid (PFOS)	2.90 U	2.60 U	2.70 U	2.70 U	2.70 U	2.70 U	2.90 U
Perfluorooctanoic acid (PFOA)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.960 U	0.880 U	<b>11.0</b>	0.900 U	0.900 U	0.900 U	0.960 U
Perfluorotetradecanoic acid (PFTeDA)	2.90 U	2.60 U	2.70 U	2.70 U	2.70 U	2.70 U	2.90 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.60 U	2.70 U	2.70 U	2.70 U	2.70 U	2.90 U
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.30 U	1.40 U	1.40 U	1.30 U	1.30 U	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>48.8</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>



**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
 KGS 2021 J2 North SPM Fall  
 J2 Range Northern

	Location	MW-640M2	MW-703M1	MW-703M2	MW-704M1	MW-704M2
	Field Sample ID	MW-640M2_F21	MW-703M1_F21	MW-703M2_F21	MW-704M1_F21	MW-704M2_F21
	Sampling Depth	216.00 - 226.00	248.00 - 258.00	224.10 - 234.10	244.00 - 254.00	217.80 - 227.80
	Sampling Date	09/07/2021	09/14/2021	09/14/2021	09/13/2021	09/13/2021
	SDG	320787611	320790821	320790821	320790821	320790821
	Sample Type	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>		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	19.0 U	19.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.10 U	9.80 U	9.70 U	9.70 U	9.40 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.10 U	9.80 U	9.70 U	9.70 U	9.40 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.10 U	9.80 U	9.70 U	9.70 U	9.40 U
Perfluorobutanesulfonic acid (PFBS)		0.910 U	0.980 U	0.970 U	0.970 U	0.940 U
Perfluorobutanoic acid (PFBA)		1.40 U	1.50 U	1.50 U	<b>3.30</b>	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.50 U	1.50 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.910 U	<b>3.90</b>	<b>2.00</b>	<b>2.00</b>	<b>2.20</b>
Perfluorododecanoic acid (PFDoA)		1.40 U	1.50 U	1.50 U	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.910 U	0.980 U	0.970 U	0.970 U	0.940 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.50 U	1.50 U	1.50 U	1.40 U
Perfluorohexane sulfonate (PFHxS)		0.910 U	0.980 U	0.970 U	0.970 U	0.940 U
Perfluorohexanoic acid (PFHxA)		0.910 U	0.980 U	0.970 U	<b>0.900 J</b>	0.940 U
Perfluorononanoic acid (PFNA)		1.40 U	<b>1.60 J</b>	<b>0.640 J</b>	<b>1.10 J</b>	<b>0.830 J</b>
Perfluorooctanesulfonamide (PFOSA)		2.70 U	2.90 U	2.90 U	2.90 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		2.70 U	2.90 U	2.90 U	2.90 U	2.80 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.50 U	1.50 U	1.50 U	1.40 U
Perfluoropentanoic acid (PFPeA)		0.910 U	<b>0.700 J</b>	0.970 U	<b>3.20</b>	0.940 U
Perfluorotetradecanoic acid (PFTeDA)		2.70 U	2.90 U	2.90 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.70 U	2.90 U	2.90 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.50 U	1.50 U	1.50 U	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>5.50</b>	<b>2.64</b>	<b>3.10</b>	<b>3.03</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>6.20</b>	<b>2.64</b>	<b>10.5</b>	<b>3.03</b>

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

	<b>Location</b>	J2EW0002
	<b>Field Sample ID</b>	J2EW0002_521
	<b>Sampling Depth</b>	198.00 - 233.00
	<b>Sampling Date</b>	01/13/2021
	<b>SDG</b>	320689351
	<b>Sample Type</b>	<b>Normal</b>
<b>PFAS 21 Cmps</b>		Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)		<b>7.40 J</b>
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)		<b>0.430 J</b>
Perfluoroheptanoic acid (PFHpA)		<b>0.860 J</b>
Perfluorohexane sulfonate (PFHxS)		<b>11.0</b>
Perfluorohexanoic acid (PFHxA)		<b>0.900 J</b>
Perfluorononanoic acid (PFNA)		1.40 U
Perfluorooctanesulfonamide (PFOSA)		<b>1.80 J</b>
Perfluorooctanesulfonic acid (PFOS)		<b>1.00 J</b>
Perfluorooctanoic acid (PFOA)		<b>1.80 J</b>
Perfluoropentanoic acid (PFPeA)		1.90 U
Perfluorotetradecanoic acid (PFTeDA)		2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.80 U
Perfluoroundecanoic acid (PFUnA)		1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>2.80</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>14.7</b>
	<b>§Sum of All Compounds Collected</b>	<b>25.2</b>

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

	Location	90EW0001	90WT0004	J3-EFF	J3-EFF	J3-INF	J3-INF
	Field Sample ID	90EW0001_F21	90WT0004_F21	J3-EFF_4Q21	J3-EFF_F21	J3-INF_4Q21	J3-INF_F21
	Sampling Depth	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00	0.00 - 0.00
	Sampling Date	07/13/2021	08/10/2021	10/20/2021	07/13/2021	10/20/2021	07/13/2021
	SDG	320762631	320775331	320807451	320762631	320807451	320762631
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	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	9.20 U	9.60 U	9.50 U	9.70 U	9.50 U	9.50 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.20 U	9.20 U	9.60 U	9.50 U	9.70 U	9.50 U	9.50 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.20 U	9.20 U	9.60 U	9.50 U	9.70 U	9.50 U	9.50 U
Perfluorobutanesulfonic acid (PFBS)	0.920 U	0.920 U	0.960 U	0.950 U	0.970 U	0.950 U	0.950 U
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	0.920 U	0.920 U	0.960 U	0.950 U	0.970 U	0.950 U	0.950 U
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.920 U	0.920 U	0.960 U	0.950 U	0.970 U	0.950 U	0.950 U
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorohexane sulfonate (PFHxS)	<b>0.500 J</b>	0.920 U	0.960 U	0.950 U	<b>1.00 J</b>	<b>1.20 J</b>	<b>1.20 J</b>
Perfluorohexanoic acid (PFHxA)	0.920 U	0.920 U	0.960 U	0.950 U	0.970 U	0.950 U	0.950 U
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)	2.70 U	2.80 U	2.90 U	2.90 U	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)	2.70 U	2.80 U	2.90 U	2.90 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	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPeA)	0.920 U	0.920 U	0.960 U	0.950 U	0.970 U	0.950 U	0.950 U
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	2.80 U	2.90 U	2.90 U	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTTrDA)	2.70 U	2.80 U	2.90 U	2.90 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	1.50 U	1.40 U	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.500</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.00</b>	<b>1.20</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.500</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.00</b>	<b>1.20</b>

**PFAS Summary Report – Groundwater**  
**Joint Base Cape Cod, IAGWSP**  
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 J3 Range

	Location	J3EW0032	J3EWIP1	J3EWIP2	MW-142M2	MW-142S	MW-143M1
	Field Sample ID	J3EW0032_F21	J3EWIP1_F21	J3EWIP2_F21	MW-142M2_F21	MW-142S_F21	MW-143M1_F21
	Sampling Depth	102.00 - 152.00	153.00 - 193.00	150.50 - 170.50	140.00 - 150.00	42.00 - 52.00	144.00 - 154.00
	Sampling Date	07/13/2021	07/13/2021	07/13/2021	07/27/2021	07/27/2021	07/26/2021
	SDG	320762631	320762631	320762631	320769671	320769671	320769671
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>		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	20.0 U	19.0 UJ	19.0 UJ	19.0 UJ
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.80 U	9.40 U	9.80 U	9.70 UJ	9.30 UJ	9.60 UJ
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.80 U	9.40 U	9.80 U	9.70 UJ	9.30 UJ	9.60 UJ
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.80 U	9.40 U	9.80 U	9.70 UJ	9.30 UJ	9.60 UJ
Perfluorobutanesulfonic acid (PFBS)		0.980 U	0.940 U	0.980 U	0.970 UJ	0.930 UJ	0.960 UJ
Perfluorobutanoic acid (PFBA)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
Perfluorodecanesulfonic acid (PFDS)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
Perfluorodecanoic acid (PFDA)		0.980 U	0.940 U	0.980 U	0.970 UJ	0.930 UJ	0.960 UJ
Perfluorododecanoic acid (PFDoA)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
Perfluoroheptanesulfonic acid (PFHpS)		0.980 U	0.940 U	0.980 U	0.970 UJ	0.930 UJ	0.960 UJ
Perfluoroheptanoic acid (PFHpA)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
Perfluorohexane sulfonate (PFHxS)		<b>0.720 J</b>	<b>0.520 J</b>	<b>2.80</b>	<b>2.80 J</b>	0.930 UJ	0.960 UJ
Perfluorohexanoic acid (PFHxA)		0.980 U	0.940 U	0.980 U	0.970 UJ	0.930 UJ	0.960 UJ
Perfluorononanoic acid (PFNA)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
Perfluorooctanesulfonamide (PFOSA)		2.90 U	2.80 U	2.90 U	2.90 UJ	2.80 UJ	2.90 UJ
Perfluorooctanesulfonic acid (PFOS)		2.90 U	2.80 U	2.90 U	2.90 UJ	2.80 UJ	2.90 UJ
Perfluorooctanoic acid (PFOA)		1.50 U	1.40 U	1.50 U	1.50 UJ	<b>0.510 J</b>	1.40 UJ
Perfluoropentanoic acid (PFPeA)		0.980 U	0.940 U	0.980 U	0.970 UJ	0.930 UJ	0.960 UJ
Perfluorotetradecanoic acid (PFTeDA)		2.90 U	2.80 U	2.90 U	2.90 UJ	2.80 UJ	2.90 UJ
Perfluorotridecanoic acid (PFTrDA)		2.90 U	2.80 U	2.90 U	2.90 UJ	2.80 UJ	2.90 UJ
Perfluoroundecanoic acid (PFUnA)		1.50 U	1.40 U	1.50 U	1.50 UJ	1.40 UJ	1.40 UJ
	<b>+PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.510</b>	<b>0.00</b>
	<b>#PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.720</b>	<b>0.520</b>	<b>2.80</b>	<b>2.80</b>	<b>0.510</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.720</b>	<b>0.520</b>	<b>2.80</b>	<b>2.80</b>	<b>0.510</b>	<b>0.00</b>

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 J3 Range

	Location	MW-143M2	MW-143M2	MW-144M2	MW-144S	MW-145M1	MW-145S
	Field Sample ID	MW-143M2_F21DR	MW-143M2_F21R	MW-144M2_F21	MW-144S_F21R	MW-145M1_F21	MW-145S_F21
	Sampling Depth	117.00 - 122.00	117.00 - 122.00	130.00 - 140.00	26.00 - 36.00	125.00 - 135.00	30.00 - 40.00
	Sampling Date	09/16/2021	09/16/2021	07/27/2021	09/16/2021	08/11/2021	08/11/2021
	SDG	320791142	320791142	320769671	320791142	320776031	320776031
	Sample Type	Field Duplicate	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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 UJ	20.0 U	19.0 U	19.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.50 U	9.40 U	9.40 UJ	9.90 U	9.50 U	9.40 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.50 U	9.40 U	9.40 UJ	9.90 U	9.50 U	9.40 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.50 U	9.40 U	9.40 UJ	9.90 U	9.50 U	9.40 U	
Perfluorobutanesulfonic acid (PFBS)	<b>0.640 J</b>	<b>0.700 J</b>	0.940 UJ	0.990 U	0.950 U	0.940 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	0.950 U	0.940 U	0.940 UJ	0.990 U	0.950 U	0.940 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.950 U	0.940 U	0.940 UJ	0.990 U	0.950 U	0.940 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
Perfluorohexane sulfonate (PFHxS)	<b>4.10</b>	<b>4.00</b>	0.940 UJ	0.990 U	0.950 U	<b>1.50 J</b>	
Perfluorohexanoic acid (PFHxA)	0.950 U	0.940 U	0.940 UJ	0.990 U	0.950 U	<b>0.630 J</b>	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.80 UJ	3.00 U	2.90 U	2.80 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.80 U	2.80 UJ	<b>3.60 J</b>	2.90 U	<b>3.90</b>	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 UJ	<b>0.570 J</b>	1.40 U	<b>0.760 J</b>	
Perfluoropentanoic acid (PFPeA)	0.950 U	0.940 U	0.940 UJ	0.990 U	0.950 U	0.940 U	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	2.80 UJ	3.00 U	2.90 U	2.80 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.80 U	2.80 UJ	3.00 U	2.90 U	2.80 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 UJ	1.50 U	1.40 U	1.40 U	
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>4.17</b>	<b>0.00</b>	<b>4.66</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>4.10</b>	<b>4.00</b>	<b>0.00</b>	<b>4.17</b>	<b>0.00</b>	<b>6.16</b>
	<b>§Sum of All Compounds Collected</b>	<b>4.74</b>	<b>4.70</b>	<b>0.00</b>	<b>4.17</b>	<b>0.00</b>	<b>6.79</b>

**PFAS Summary Report – Groundwater**  
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 J3 Range

	Location	MW-157M1	MW-157M2	MW-157M3	MW-163S	MW-181S	MW-181S
	Field Sample ID	MW-157M1_F21	MW-157M2_F21	MW-157M3_F21	MW-163S_F21	MW-181S_F21	MW-181S_F21D
	Sampling Depth	154.00 - 164.00	110.00 - 120.00	70.00 - 80.00	38.00 - 48.00	32.25 - 42.25	32.25 - 42.25
	Sampling Date	07/14/2021	07/14/2021	07/14/2021	07/14/2021	08/02/2021	08/02/2021
	SDG	320763871	320763871	320763871	320763871	320772471	320772471
	Sample Type	Normal	Normal	Normal	Normal	Normal	Field Duplicate
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	19.0 U	18.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.30 U	9.70 U	10.0 U	9.40 U	9.50 U	9.00 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.30 U	9.70 U	10.0 U	9.40 U	9.50 U	9.00 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.30 U	9.70 U	10.0 U	9.40 U	9.50 U	9.00 U	
Perfluorobutanesulfonic acid (PFBS)	0.930 U	<b>9.40</b>	1.00 U	0.940 U	0.950 U	0.900 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	0.930 U	0.970 U	1.00 U	0.940 U	0.950 U	0.900 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.930 U	0.970 U	1.00 U	0.940 U	0.950 U	0.900 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorohexane sulfonate (PFHxS)	0.930 U	<b>0.720 J</b>	<b>1.50 J</b>	<b>0.450 J</b>	0.950 U	0.900 U	
Perfluorohexanoic acid (PFHxA)	0.930 U	0.970 U	1.00 U	0.940 U	0.950 U	0.900 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.90 U	3.00 U	2.80 U	2.80 U	2.70 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	2.90 U	3.00 U	<b>4.80</b>	<b>15.0</b>	<b>15.0</b>	
Perfluorooctanoic acid (PFOA)	1.40 U	1.50 U	<b>0.730 J</b>	<b>1.10 J</b>	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPeA)	0.930 U	0.970 U	1.00 U	0.940 U	0.950 U	0.900 U	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.90 U	3.00 U	2.80 U	2.80 U	2.70 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.90 U	3.00 U	2.80 U	2.80 U	2.70 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.50 U	1.50 U	1.40 U	1.40 U	1.40 U	
	<b>‡PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.730</b>	<b>5.90</b>	<b>15.0</b>	<b>15.0</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.720</b>	<b>2.23</b>	<b>6.35</b>	<b>15.0</b>	<b>15.0</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>10.1</b>	<b>2.23</b>	<b>6.35</b>	<b>15.0</b>	<b>15.0</b>

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

	Location	MW-193S	MW-193S	MW-196M1	MW-196S	MW-197M2	MW-197M2
	Field Sample ID	MW-193S_F21	MW-193S_F21D	MW-196M1_F21	MW-196S_F21	MW-197M2_F21	MW-197M2_F21D
	Sampling Depth	32.50 - 37.50	32.50 - 37.50	45.00 - 50.00	32.00 - 37.00	80.20 - 85.20	80.20 - 85.20
	Sampling Date	08/04/2021	08/04/2021	08/11/2021	08/11/2021	08/02/2021	08/02/2021
	SDG	320772871	320772871	320776031	320776031	320772471	320772471
	Sample Type	Normal	Field Duplicate	Normal	Normal	Normal	Field Duplicate
<b>PFAS 21 Cmps</b>		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	18.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.40 U	9.40 U	9.60 U	10.0 U	9.60 U	9.20 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.40 U	9.40 U	9.60 U	10.0 U	9.60 U	9.20 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.40 U	9.40 U	9.60 U	10.0 U	9.60 U	9.20 U
Perfluorobutanesulfonic acid (PFBS)		0.940 U	0.940 U	0.960 U	1.00 U	<b>0.450 J</b>	<b>0.460 J</b>
Perfluorobutanoic acid (PFBA)		1.40 U	1.40 U	<b>0.900 J</b>	1.50 U	<b>2.60</b>	<b>2.60</b>
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.940 U	0.940 U	0.960 U	1.00 U	0.960 U	0.920 U
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.940 U	0.940 U	0.960 U	1.00 U	0.960 U	0.920 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.40 U	1.40 U	1.50 U	<b>3.00</b>	<b>3.00</b>
Perfluorohexane sulfonate (PFHxS)		<b>2.80</b>	<b>2.60</b>	0.960 U	<b>0.440 J</b>	<b>15.0</b>	<b>15.0</b>
Perfluorohexanoic acid (PFHxA)		0.940 U	0.940 U	<b>0.760 J</b>	<b>0.480 J</b>	<b>5.00</b>	<b>5.50</b>
Perfluorononanoic acid (PFNA)		1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)		2.80 U	2.80 U	2.90 U	3.00 U	2.90 U	2.80 U
Perfluorooctanesulfonic acid (PFOS)		2.80 U	2.80 U	2.90 U	<b>5.30 J</b>	<b>4.90</b>	<b>4.80</b>
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	<b>1.40 J</b>	<b>0.700 J</b>	<b>2.70</b>	<b>2.90</b>
Perfluoropentanoic acid (PFPeA)		0.940 U	0.940 U	0.960 U	1.00 U	<b>4.20</b>	<b>4.20</b>
Perfluorotetradecanoic acid (PFTeDA)		2.80 U	2.80 U	2.90 U	3.00 U	2.90 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)		2.80 U	2.80 U	2.90 U	3.00 U	2.90 U	2.80 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.40 U	1.40 U	1.50 U	1.40 U	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>1.40</b>	<b>6.00</b>	<b>7.60</b>	<b>7.70</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>2.80</b>	<b>2.60</b>	<b>1.40</b>	<b>6.44</b>	<b>25.6</b>	<b>25.7</b>
	<b>§Sum of All Compounds Collected</b>	<b>2.80</b>	<b>2.60</b>	<b>3.06</b>	<b>6.92</b>	<b>37.9</b>	<b>38.5</b>

**PFAS Summary Report – Groundwater**  
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 J3 Range

	Location	MW-197M3	MW-198M4	MW-218M1	MW-218M1	MW-218M2	MW-218M2
	Field Sample ID	MW-197M3_F21	MW-198M4_F21	MW-218M1_F21	MW-218M1_F21R	MW-218M2_F21	MW-218M2_F21R
	Sampling Depth	60.20 - 65.20	70.00 - 75.00	128.00 - 133.00	128.00 - 133.00	98.00 - 103.00	98.00 - 103.00
	Sampling Date	08/02/2021	08/05/2021	08/16/2021	09/30/2021	08/16/2021	09/30/2021
	SDG	320772471	320773351	320778561	320797671	320778561	320797671
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	18.0 U	19.0 U	19.0 U	20.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.40 U	9.30 U	9.10 U	9.50 U	9.40 U	10.0 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.40 U	9.30 U	9.10 U	9.50 U	9.40 U	10.0 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.40 U	9.30 U	9.10 U	9.50 U	9.40 U	10.0 U	
Perfluorobutanesulfonic acid (PFBS)	0.940 U	0.930 U	<b>0.420 J</b>	0.950 U	0.940 U	1.00 U	
Perfluorobutanoic acid (PFBA)	<b>1.30 J</b>	<b>1.40 J</b>	<b>400</b>	1.40 U	<b>64.0</b>	<b>3.00</b>	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.40 U	1.40 U	1.50 U	
Perfluorodecanoic acid (PFDA)	0.940 U	0.930 U	<b>42.0</b>	<b>5.60</b>	<b>10.0</b>	<b>5.10</b>	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	<b>32.0</b>	1.40 U	<b>2.30</b>	<b>0.600 J</b>	
Perfluoroheptanesulfonic acid (PFHpS)	0.940 U	0.930 U	0.910 U	0.950 U	0.940 U	1.00 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	<b>360</b>	1.40 U	<b>100</b>	<b>2.10</b>	
Perfluorohexane sulfonate (PFHxS)	<b>2.40</b>	<b>8.50</b>	0.910 U	0.950 U	0.940 U	1.00 U	
Perfluorohexanoic acid (PFHxA)	<b>0.590 J</b>	0.930 U	<b>350</b>	0.950 U	<b>57.0</b>	<b>1.90 J</b>	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	<b>75.0</b>	<b>6.20</b>	<b>35.0</b>	<b>6.20</b>	
Perfluorooctanesulfonamide (PFOSA)	2.80 U	2.80 U	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluorooctanesulfonic acid (PFOS)	2.80 U	<b>1.70 J</b>	2.70 U	2.80 U	2.80 U	3.00 U	
Perfluorooctanoic acid (PFOA)	<b>1.00 J</b>	<b>0.870 J</b>	<b>120</b>	<b>5.70</b>	<b>49.0</b>	<b>2.10</b>	
Perfluoropentanoic acid (PFPeA)	0.940 U	0.930 U	<b>770</b>	0.950 U	<b>110</b>	<b>5.00</b>	
Perfluorotetradecanoic acid (PFTeDA)	2.80 U	2.80 U	<b>35.0</b>	2.80 U	<b>2.00 J</b>	3.00 U	
Perfluorotridecanoic acid (PFTTrDA)	2.80 U	2.80 U	<b>49.0</b>	2.80 U	<b>2.60 J</b>	3.00 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	<b>48.0</b>	<b>3.60</b>	<b>6.80</b>	<b>3.50</b>	
	<b>+PFOS + PFOA (EPA)</b>	<b>1.00</b>	<b>2.57</b>	<b>120</b>	<b>5.70</b>	<b>49.0</b>	<b>2.10</b>
	<b>#PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>3.40</b>	<b>11.1</b>	<b>597</b>	<b>17.5</b>	<b>194</b>	<b>15.5</b>
	<b>§Sum of All Compounds Collected</b>	<b>5.29</b>	<b>12.5</b>	<b>2280</b>	<b>21.1</b>	<b>439</b>	<b>29.5</b>



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 J3 Range

	Location	MW-218M3	MW-218M3	MW-250M1	MW-250M3	MW-30	MW-576M2
	Field Sample ID	MW-218M3_F21	MW-218M3_F21R	MW-250M1_F21	MW-250M3_F21	MW-30_F21	MW-576M2_F21
	Sampling Depth	78.00 - 83.00	78.00 - 83.00	185.00 - 195.00	95.00 - 105.00	26.00 - 36.00	133.90 - 143.90
	Sampling Date	08/16/2021	09/30/2021	07/15/2021	07/15/2021	08/02/2021	08/10/2021
	SDG	320778561	320797671	320763871	320763871	320772471	320775331
	Sample Type	Normal	Normal	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>	Results (ng/L)	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	18.0 U	18.0 U	19.0 U	
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.10 U	9.30 U	9.00 U	9.00 U	9.00 U	9.40 U	
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.10 U	9.30 U	9.00 U	9.00 U	9.00 U	9.40 U	
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.10 U	9.30 U	9.00 U	9.00 U	9.00 U	9.40 U	
Perfluorobutanesulfonic acid (PFBS)	0.910 U	0.930 U	0.900 U	0.900 U	0.900 U	0.940 U	
Perfluorobutanoic acid (PFBA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluorodecanesulfonic acid (PFDS)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluorodecanoic acid (PFDA)	0.910 U	0.930 U	0.900 U	0.900 U	0.900 U	0.940 U	
Perfluorododecanoic acid (PFDoA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluoroheptanesulfonic acid (PFHpS)	0.910 U	0.930 U	0.900 U	0.900 U	0.900 U	0.940 U	
Perfluoroheptanoic acid (PFHpA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluorohexane sulfonate (PFHxS)	0.910 U	0.930 U	<b>0.550 J</b>	<b>1.90</b>	0.900 U	<b>0.470 J</b>	
Perfluorohexanoic acid (PFHxA)	0.910 U	0.930 U	0.900 U	0.900 U	0.900 U	0.940 U	
Perfluorononanoic acid (PFNA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluorooctanesulfonamide (PFOSA)	2.70 U	2.80 U	2.70 U	2.70 U	2.70 U	2.80 U	
Perfluorooctanesulfonic acid (PFOS)	2.70 U	2.80 U	2.70 U	<b>1.00 J</b>	<b>7.00</b>	2.80 U	
Perfluorooctanoic acid (PFOA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
Perfluoropentanoic acid (PFPeA)	0.910 U	0.930 U	0.900 U	0.900 U	0.900 U	0.940 U	
Perfluorotetradecanoic acid (PFTeDA)	2.70 U	2.80 U	2.70 U	2.70 U	2.70 U	2.80 U	
Perfluorotridecanoic acid (PFTTrDA)	2.70 U	2.80 U	2.70 U	2.70 U	2.70 U	2.80 U	
Perfluoroundecanoic acid (PFUnA)	1.40 U	1.40 U	1.40 U	1.30 U	1.40 U	1.40 U	
	<b>±PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>1.00</b>	<b>7.00</b>	<b>0.00</b>
	<b>±PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>0.00</b>	<b>0.550</b>	<b>2.90</b>	<b>7.00</b>	<b>0.470</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.00</b>	<b>0.00</b>	<b>0.550</b>	<b>2.90</b>	<b>7.00</b>	<b>0.470</b>

**PFAS Summary Report – Groundwater**  
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 J3 Range

	Location	MW-636M1	MW-636M2	MW-653M1	MW-653M2
	Field Sample ID	MW-636M1_F21	MW-636M2_F21	MW-653M1_F21	MW-653M2_F21
	Sampling Depth	141.60 - 151.60	110.50 - 120.50	147.50 - 157.50	59.30 - 69.30
	Sampling Date	07/29/2021	07/29/2021	07/29/2021	07/29/2021
	SDG	320769861	320769861	320769861	320769861
	Sample Type	Normal	Normal	Normal	Normal
<b>PFAS 21 Cmps</b>		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
8:2 Fluorotelomer sulfonate (8:2 FTS)		9.50 U	9.30 U	9.80 U	9.10 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)		9.50 U	9.30 U	9.80 U	9.10 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)		9.50 U	9.30 U	9.80 U	9.10 U
Perfluorobutanesulfonic acid (PFBS)		0.950 U	<b>1.20 J</b>	<b>3.50</b>	0.910 U
Perfluorobutanoic acid (PFBA)		1.40 U	1.40 U	<b>1.20 J</b>	1.40 U
Perfluorodecanesulfonic acid (PFDS)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluorodecanoic acid (PFDA)		0.950 U	0.930 U	0.980 U	0.910 U
Perfluorododecanoic acid (PFDoA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)		0.950 U	0.930 U	0.980 U	0.910 U
Perfluoroheptanoic acid (PFHpA)		1.40 U	1.40 U	<b>2.50</b>	1.40 U
Perfluorohexane sulfonate (PFHxS)		0.950 U	<b>4.80</b>	<b>83.0</b>	0.910 U
Perfluorohexanoic acid (PFHxA)		<b>0.460 J</b>	<b>0.570 J</b>	<b>5.80</b>	0.910 U
Perfluorononanoic acid (PFNA)		1.40 U	1.40 U	1.50 U	1.40 U
Perfluorooctanesulfonamide (PFOSA)		2.90 U	2.80 U	2.90 U	2.70 U
Perfluorooctanesulfonic acid (PFOS)		2.90 U	<b>1.60 J</b>	<b>5.30</b>	2.70 U
Perfluorooctanoic acid (PFOA)		1.40 U	1.40 U	<b>1.80 J</b>	1.40 U
Perfluoropentanoic acid (PFPeA)		0.950 U	0.930 U	<b>3.30</b>	0.910 U
Perfluorotetradecanoic acid (PFTeDA)		2.90 U	2.80 U	2.90 U	2.70 U
Perfluorotridecanoic acid (PFTrDA)		2.90 U	2.80 U	2.90 U	2.70 U
Perfluoroundecanoic acid (PFUnA)		1.40 U	1.40 U	1.50 U	1.40 U
	<b>†PFOS + PFOA (EPA)</b>	<b>0.00</b>	<b>1.60</b>	<b>7.10</b>	<b>0.00</b>
	<b>‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)</b>	<b>0.00</b>	<b>6.40</b>	<b>92.6</b>	<b>0.00</b>
	<b>§Sum of All Compounds Collected</b>	<b>0.460</b>	<b>8.17</b>	<b>106</b>	<b>0.00</b>

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

### 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