MONTHLY PROGRESS REPORT #288
FOR MARCH 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 March 2021.

1. SUMMARY OF REMEDIATION ACTIONS

Remediation Actions (RA) Underway at Camp Edwards as of 2 April 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, Pew Road, Base Boundary, and the Leading Edge include extraction wells, ex-situ treatment processes to remove explosives compounds and perchlorate from the groundwater, and injection wells to return treated water to the aquifer.

The Frank Perkins Road Treatment Facility has been optimized as part of the Environmental and System Performance Monitoring (ESPM) program at Demolition Area 1. The treatment facility continues to operate at a flow rate of 175 gallons per minute (gpm), with over 2.814 billion gallons of water treated and re-injected as of 02 April 2021. No Frank Perkins Road Treatment Facility shutdowns occurred in March.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM. As of 02 April 2021, over 672.9 million gallons of water was treated and re-injected. The following Pew Road MTU shutdowns occurred in March.

- 1155 h on 08 March 2021 turned off per USACE with regulatory approval.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm. As of 02 April 2021, over 294 million gallons of water was treated and re-injected. No Base Boundary MTU shutdowns occurred in March.

The Leading Edge system continues to operate at a flow rate of 100 gpm. As of 02 April 2021, over 243.2 million gallons of water was treated and re-injected. No Leading Edge system shutdowns occurred in March.

J-2 Range Groundwater RA

Northern Plant

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

The Northern Treatment Building G continues to operate at a flow rate of 225 gpm. As of 02 April 2021, over 1.347 billion gallons of water have been treated and re-injected. The following Northern Treatment Building G shutdowns occurred in March.

- 0042 on 02 March 2021 due to a power supply interruption caused by strong winds and was restarted at 0735 on 02 March 2021.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 02 April 2021, over 1.809 billion gallons of water have been treated and re-injected. No Northern MTU shutdowns occurred in March.

Eastern Plant

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

The MTUs H and I continue to operate at a flow rate of 250 gpm. As of 02 April 2021, over 1.457 billion gallons of water have been treated and re-injected. The following MTU H and I shutdowns occurred in March through 02 April.

- MTU H turned off at 0730 on 05 March 2021 for maintenance and repairs and was restarted at 1400 on 10 March 2021.
- MTU H and I were turned off at 0755 on 31 March 2021 for power line and vent valve repairs, and were restarted at 1053 on 31 March 2021.
- MTU H turned off at 0815 on 01 April 2021 to repair a cracked flange and was restarted at 0915 on 01 April 2021.

MTU J continues to operate at a flow rate of 120 gpm. As of 02 April 2021, over 676.1 million gallons of water have been treated and re-injected. The following MTU J shutdowns occurred in March.

- 0745 on 31 March 2021 to repair a broken insulator and was restarted at 0853 on 0853 on 31 March 2021

MTU K continues to operate at a flow rate of 125 gpm. As of 02 April 2021, over 797.0 million gallons of water have been treated and re-injected. The following MTU K shutdowns occurred in March.

- 1806 on 28 March 2021 due to a power supply interruption caused by a broken insulator and a blown fuse on the powerline, and was restarted at 0836 on 31 March 2021.

<u>J-3 Range Groundwater RA</u>

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

The J-3 system is currently operating at 255 gpm (90EW0001 off). As of 02 April 2021, over 1.467 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdowns occurred in March:

- Well 90EW0001 was turned off at 0742 01 February 2021 due to low flow. Pump and pipe string were removed 17 February 2021, and blind flange installed. Downhole camera and well redevelopment were completed 04 and 17-18 March 2021, respectively. The well remains off until new drop pipe, motor, and pump are installed.

J-1 Range Groundwater RA

Southern Plant

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

The Southern MTU continues to operate at a flow rate of 125 gpm. As of 02 April 2021, over 655.2 million gallons of water have been treated and re-injected. The following J-1 Range Southern system shutdowns occurred in March.

- 0740 on 31 March 2021 to repair a broken insulator on the powerline for J2 East and was restarted at 0907 on 31 March 2021.

Northern Plant

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

The Northern MTU continues to operate at a total system flow rate of 250 gpm. As of 02 April 2021, over 950.3 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shutdowns occurred in March.

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 02 April 2021, over 2.411 billion gallons of water have been treated and re-injected. The following CIA system shutdowns occurred in March.

- 1739 h on 23 March 2021 System 3 shut down due to a “VFD fault” alarm from a tripped circuit breaker and was restarted at 0756 on 25 March 2021.

2. SUMMARY OF ACTIONS TAKEN

Operable Unit (OU) Activity As of 02 April 2021

CIA

- Complete BIP operations, transport and disposal of BIP materials, cracked items, and excavated soil.
- Complete demo operation.
- Complete intrusive investigations.
- Complete routine MD processing.
- Inspect CSS liner.
- Perform CSS ISM sampling.
- Perform routine check of the BEM cover.
- SPM program groundwater sampling.
- Parsons demobilize from site.

Demolition Area 1

- No activity.

Demolition Area 2

- No activity

J-1 Range

- No activity.

J-2 Range

- No activity.

J-3 Range

- No activity.

L Range

- No activity.

Small Arms Ranges

No activity.

Training Areas

- No activity.

Other

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

JBCC IAGWSP Tech Update Meeting Minutes for 11 March 2021

Project and Fieldwork Update

The Demolition Area 1 proposed drilling locations and required roadways were staked last Wednesday. They will start on the roads in early April. The Demolition Area 1 Pew Road system was shut down on February 8th and the vessels were drained. All treatment systems are up and running with the exception one J-3 system extraction well. The J-3 system extraction well EW0001 on Camp Good News which originally went down due to a power outage, continues to be offline. A video was taken of the well and a significant amount of sediment was seen in it. The team is trying to determine the best way to redevelop the well. The sampling crews are working in the CIA will continue through mid-April and are ahead of schedule. Coordination with UXO teams has been going well. They will move to the J-1 Range south after they finish in the CIA.

Dawson de-mobbed on December 18th and they are scheduled to return March 22nd to finish the Former E Range work, which is about halfway complete.
In the Central Impact Area, there are two dig teams working. Survey Units 8 and 9 are underway and ~57-78% complete, respectively. They are still on track to finish in April with demolition operations, scrap management and field cleanup prior to their final de-mob. They will leave approximately 1,000 for the new UXO contractor, IE-Weston. They will mobilize their management team on April 5th and their initial field team on April 12th. IE-Weston is finalizing the project note for the upcoming field work and the group should receive it in a couple of weeks.

Central Impact Area 2021 Field Season Grid Selection

Discussion was held on the selection of grids for the upcoming 2021 CIA field season. A figure marked up with the proposed areas was provided and discussed. There were 14.5 acres shown and it was noted that they would be prioritized on workflow and separation distances. IE-Weston estimates they can do more than ten acres but may not be able to do all of the 14.5 acres shown. EPA suggested making the 14 grids along the East side the lowest priority. It was suggested that the ten acres include the 18.5 grids at the SCAR rocket site, the seven grids at the west side, the eight grids down near the hot spot and if there is acreage left on the contract after that, move to the east side grids. A revised figure will be provided to the group.

L Range Plume Shell Presentation

A presentation was provided on the L Range plume shell. It was noted that a draft of the technical memo that was recently discussed has been updated to include the 3D contouring that was performed. A recap of the L Range RDX Sensitivity Plume Shell was provided.

The team was reminded that RDX plume shells for IAGWSP sites are updated every five years and the L Range plume shell was last updated with data through November of 2015.

The process for the 3D plume shell development was discussed. The 2D data points were retained along with control points (x,y,z,c) and were imported into Groundwater Desktop (GWD) Software. The data were then kriged to the L Range MODFLOW Grid. Search radius and variogram settings were selected and a model versus experimental variogram was computed. The maximum kriged value was 2.01 µg/L and the maximum value in the dataset is 2.17 µg/L. The mass of RDX above Background (0.25 µg/L consistent with Decision Document) equals

0.03 pounds (<14 grams) and the mass ≥ 0.6 µg/L equals 0.018 pounds (<10 grams). The small plumelet to the northwest could not be kriged above 0.6 µg/L but did achieve a value of 0.5 µg/L. The exported concentration file from GWD software to MODFLOW Groundwater Vistas (GWV) software for fate and transport simulations. Images showing the model grid showing plan view and cross section view of kriged RDX plumes and a cross sectional view of kriged plumes showing data points and kriged plumes with transparency were displayed and discussed.

The GWV fate and transport simulations were discussed. The imported initial concentration matrix into GWV used current well file for injection / extraction well rates. The concentrations were mapped into GWV consistent with plume shapes developed in 2D contouring. A retardation rate of 1.05 for RDX and aquifer dispersivity values as used in the Final L Range Groundwater Characterization report (ECC, 2005) was used. The transport simulation ran for 40 years with output provided every half year. The transport results were consistent with the 2015 plume shell and Decision Document for RBC. Remediation to background is consistent with 2015 plume shell. A figure with the plan view of ArcGIS Contoured Plume (2D) on and the 3D interpolated Plume was displayed. The plume shell write-up and model results will be incorporated into the L Range 2021 Annual Report.

Action Items

The action items were discussed and updated.

JBCC IAGWSP Tech Update Meeting Minutes for 25 March 2021

Project and Fieldwork Update

The Demolition Area 1 proposed drilling locations and required roadways were staked and they anticipate that they will start on the roads in early April. Record of Actions for the upcoming Demolition Area 1 drilling were submitted to Natural Heritage, the Tribe and the State Historic Preservation Office. Approval on the project was received from Natural Heritage, responses from the other agencies are pending. All treatment systems are up and running with the exception of J-3 system extraction well EW0001 which continues to be offline as they wait for a pump. The sampling crews are working in the Impact Area will continue through mid-April and will move to the J-1 Range north after they finish in the CIA.

Dawson is scheduled to return April 12th to finish the Former E Range work, which is about halfway complete.

In the Central Impact Area, Parsons has two dig teams working. Next week, they will perform demolition on UXO items they have excavated. Survey Units 8 and 9 are underway and ~74-87% complete, respectively. They are still on track to finish work left on their contract in April with demolition operations, scrap management and field cleanup prior to their final de-mob. USACE is continuing to work out the details of the CDC items, currently they are coordinating with Huntsville to get the modification to the contract awarded. Parsons will leave approximately 1,100 for the new UXO contractor, IE-Weston. IE-Weston will mobilize their management team on April 5th and their initial field team on April 12th.

Central Impact Area 100% Verification Grid Presentation

A presentation was provided on the results of the CIA Phase 3 Area 3 100% dig validation. A figure showing the validation grid (38_35) was displayed and discussed. The group was reminded of the goals set in the Decision Document (remove 75-95% of UXO while maximizing removal of net explosive weight) as well as the goals of the classification (to correctly classify 95% of the targets of interest (TOI) while reducing clutter digs by greater than 70%).
JBCC IAGWSP Tech Update Meeting Minutes 25 March 2021

A figure showing the Metal Mapper data collected for all EM61 anomalies for the grid 38-35 was displayed. There were 888 EM61 anomaly locations with Metal Mapper cued data collection. Of those, there were 365 dig locations: 344 EM61 targets, five digs were on 2nd sources on an EM61 target and 16 were re-shoot locations unassociated with any EM61 targets. This resulted in a recommended dig rate of 41.1%. The remaining 544 anomalies were dug for QA. Fifty-nine TOI (UXO or UXO-like items) were recovered. For the classification results, 522 clutter items were correctly classified, 37% of the clutter was incorrectly classified as “likely- TOI” therefore not meeting the goal of reduction of clutter digs by 70%. Of the incorrect classification, 84 were category 0 digs (27.4%) for potentially poor data. Most were due to stumps/craters, possibly due to revised brush cutting procedures after hitting MD 155mm. Eighteen were predicted as 57mm or smaller, 205 were predicted as 60mm or larger. The predictions generally agreed with the Survey Unit 8 anomaly density (high) and recovered frag (larger and more of it).
One TOI was missed during excavation in grid 35_35. A photograph showing the item and the graphic of associated data was displayed. At EM61 flag 14115 an 81mm MEC at 66cm depth. The item was deeper than depth of consistent detection for 81mm (30cm). In addition, most 14115 sources modeled towards 14117, which was likely one end of a 155mm recovered at 14148. The only source modeled near 14115 was 2-curve only and small.

Phase 3 Area 3 results for the 2020 field season were discussed. Results pass the DD (75-95%) and AGC detection (95%) goals. The goal of clutter rejection of 70% is close to being met. Almost 25% of the clutter results classified as digs were the result of data collected with the Metal Mapper on stumps in Survey Unit 8.

The status and path forward was reviewed. In Phase III Area 3, the Metal Mapper data collection and classification are complete for all survey units. Survey Unit 6 and 7 digs are complete and the results have been approved by USACE. All validation digs are complete. Parsons is continuing to dig in Survey Units 8 and 9 to finish the 8,000 funded digs (now completed). The remaining digs and twelve polygon areas in Survey Units 8 and 9 will be completed by IE-Weston. A status map as of March 19, 2021 was displayed.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The JBCC Cleanup Team (JBCCCT) meeting was conducted virtually on March 24, 2021. Presentation materials can be found on the IAGWSP web site at https://jbcc-iagwsp.org/iagwsp/community/impact/presentations/. The Cleanup Team meeting discussed late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The 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 March 2021. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 to 31 March 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. 287 for February 2021 — 10 March 2021
- Demolition Area 1 Pew Road Shut Down Project Note — 09 March 2021

5. SCHEDULED ACTIONS

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

- Central Impact Area Source Removal Draft Annual Report
- Demolition Area 1 Pew Road Extraction Well Shutdown Draft Project Note
- IRA Status and Completion Report
- J-2 2020 Annual Environmental Monitoring Draft Report response to comments
- J-2 Range Phase 2 Post-DD Geo. & Soil Investigation Findings Addendum Draft Project Note
- J-3 2020 Range Annual Environmental Monitoring Draft Report response to comments
- J-3 Range Post-DD Confirmation Geophysical and Soil Investigation Findings Revised Draft Project Note
- Northwest Corner Demonstration of Compliance Draft Report MOR to RCL
- Small Arms Ranges Completion of Work Draft Report response to comments

TABLE 1
Sampling Progress: 1 to 31 March 2021

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Central Impact Area	MW-202M1	MW-202M1_S21	N	03/30/2021	Ground Water	264	274
Central Impact Area	MW-623M3	MW-623M3_S21	N	03/30/2021	Ground Water	275	285
Central Impact Area	MW-623M2	MW-623M2_S21	N	03/30/2021	Ground Water	291.8	301.8
Central Impact Area	MW-623M1	MW-623M1_S21	N	03/30/2021	Ground Water	340	350
Central Impact Area	MW-323M2	MW-323M2_S21	N	03/29/2021	Ground Water	120	130
Central Impact Area	MW-323M1	MW-323M1_S21	N	03/29/2021	Ground Water	195	205
Central Impact Area	MW-338S	MW-338S_S21	N	03/29/2021	Ground Water	72	82
Central Impact Area	MW-338M2	MW-338M2_S21	N	03/29/2021	Ground Water	119	129
Northwest Corner	MW-338M2	MW-338M2_S21	N	03/29/2021	Ground Water	119	129
Central Impact Area	MW-338M1	MW-338M1_S21	N	03/29/2021	Ground Water	189	199
Northwest Corner	MW-338M1	MW-338M1_S21	N	03/29/2021	Ground Water	189	199
Central Impact Area	MW-441M2	MW-441M2_S21	N	03/25/2021	Ground Water	109.5	119.5
Central Impact Area	MW-441M1	MW-441M1_S21	N	03/25/2021	Ground Water	204.6	214.6
Central Impact Area	MW-149M1	MW-149M1_S21	N	03/25/2021	Ground Water	237.5	247.5
Central Impact Area	MW-23M1	MW-23M1_S21	N	03/25/2021	Ground Water	225	235
Central Impact Area	MW-23D	MW-23D_S21	N	03/25/2021	Ground Water	272	282
Central Impact Area	MW-625M2	MW-625M2_S21	N	03/24/2021	Ground Water	230	240
Central Impact Area	MW-625M1	MW-625M1_S21	N	03/24/2021	Ground Water	260	270
Central Impact Area	MW-624M2	MW-624M2_S21	N	03/24/2021	Ground Water	254	264
Central Impact Area	MW-624M1	MW-624M1_S21	N	03/24/2021	Ground Water	284	294
Central Impact Area	MW-710M1	MW-710M1_S21	N	03/23/2021	Ground Water	247.5	257.5
Central Impact Area	MW-699M2	MW-699M2_S21	N	03/23/2021	Ground Water	221	231
Central Impact Area	MW-699M1	MW-699M1_S21	N	03/23/2021	Ground Water	261.5	271.5
Central Impact Area	MW-609M2	MW-609M2_S21	N	03/23/2021	Ground Water	182.39	192.39
Central Impact Area	MW-609M1	MW-609M1_S21	N	03/23/2021	Ground Water	210.39	220.39
Central Impact Area	MW-609M1	MW-609M1_S21D	FD	03/23/2021	Ground Water	210.39	220.39
Central Impact Area	MW-350M2	MW-350M2_S21	N	03/22/2021	Ground Water	126	136
Central Impact Area	MW-616M2	MW-616M2_S21	N	03/22/2021	Ground Water	107.1	117.1
Central Impact Area	MW-616M1	MW-616M1_S21	N	03/22/2021	Ground Water	217.1	227.1
Central Impact Area	MW-617M2	MW-617M2_S21	N	03/22/2021	Ground Water	118.3	128.3
Central Impact Area	MW-617M1	MW-617M1_S21	N	03/22/2021	Ground Water	175.8	185.8
Central Impact Area	MW-249M2	MW-249M2_S21	N	03/18/2021	Ground Water	174	184
Central Impact Area	MW-633M2	MW-633M2_S21	N	03/18/2021	Ground Water	197	207
Central Impact Area	MW-633M1	MW-633M1_S21	N	03/18/2021	Ground Water	282	292
Central Impact Area	MW-88M2	MW-88M2_S21	N	03/17/2021	Ground Water	213	223
Central Impact Area	MW-88M2	MW-88M2_S21D	FD	03/17/2021	Ground Water	213	223
Central Impact Area	MW-88M1	MW-88M1_S21	N	03/17/2021	Ground Water	233	243
Central Impact Area	MW-89M3	MW-89M3_S21	N	03/17/2021	Ground Water	174	184
Central Impact Area	MW-89M2	MW-89M2_S21	N	03/17/2021	Ground Water	214	224
Central Impact Area	MW-89M2	MW-89M2_S21D	FD	03/17/2021	Ground Water	214	224
Central Impact Area	MW-89M1	MW-89M1_S21	N	03/17/2021	Ground Water	234	244
Central Impact Area	MW-208M1	MW-208M1_S21	N	03/16/2021	Ground Water	195	205
Central Impact Area	MW-124M1	MW-124M1_S21	N	03/16/2021	Ground Water	234	244
Central Impact Area	MW-618M2	MW-618M2_S21	N	03/16/2021	Ground Water	190.5	200.5
Central Impact Area	MW-618M1	MW-618M1_S21	N	03/16/2021	Ground Water	238.5	248.5
Central Impact Area	MW-43M2	MW-43M2_S21	N	03/11/2021	Ground Water	200	210
Central Impact Area	MW-43M1	MW-43M1_S21	N	03/11/2021	Ground Water	223	233
Central Impact Area	MW-607M3	MW-607M3_S21	N	03/11/2021	Ground Water	157.4	167.4
Central Impact Area	MW-607M2	MW-607M2_S21	N	03/11/2021	Ground Water	177.4	187.4
Central Impact Area	MW-607M2	MW-607M2_S21D	FD	03/11/2021	Ground Water	177.4	187.4
Central Impact Area	MW-607M1	MW-607M1_S21	N	03/11/2021	Ground Water	207.4	217.4
Central Impact Area	MW-95M2	MW-95M2_S21	N	03/10/2021	Ground Water	167	177
Central Impact Area	MW-95M1	MW-95M1_S21	N	03/10/2021	Ground Water	202	212
Central Impact Area	MW-86S	MW-86S_S21	N	03/10/2021	Ground Water	143	153
Central Impact Area	MW-86M2	MW-86M2_S21	N	03/10/2021	Ground Water	158	168
Central Impact Area	MW-86M1	MW-86M1_S21	N	03/10/2021	Ground Water	208	218
Central Impact Area	MW-180M3	MW-180M3_S21	N	03/09/2021	Ground Water	171	181
Central Impact Area	MW-629M2	MW-629M2_S21	N	03/09/2021	Ground Water	186.9	196.9
Central Impact Area	MW-629M1	MW-629M1_S21	N	03/09/2021	Ground Water	216.9	226.9

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 to 31 March 2021

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Central Impact Area	MW-638M2	MW-638M2_S21	N	03/09/2021	Ground Water	204.2	214.2
Central Impact Area	MW-638M1	MW-638M1_S21	N	03/09/2021	Ground Water	261.2	271.2
Central Impact Area	MW-203M2	MW-203M2_S21	N	03/08/2021	Ground Water	176	186
Central Impact Area	MW-687M2	MW-687M2_S21	N	03/08/2021	Ground Water	188	198
Central Impact Area	MW-687M1	MW-687M1_S21	N	03/08/2021	Ground Water	232.6	242.6
Central Impact Area	MW-686M2	MW-686M2_S21	N	03/08/2021	Ground Water	194.3	204.3
Central Impact Area	MW-686M1	MW-686M1_S21	N	03/08/2021	Ground Water	243.2	253.2
Central Impact Area	MW-185M1	MW-185M1_S21	N	03/05/2021	Ground Water	247	257
Central Impact Area	MW-92S	MW-92S_S21	N	03/05/2021	Ground Water	139	149
J3 Range	J3-EFF	J3-EFF-174A	N	03/05/2021	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-174A	N	03/05/2021	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-174A	N	03/05/2021	Process Water	0	0
Central Impact Area	MW-729M1	MW-729M1_S21	N	03/05/2021	Ground Water	231.5	241.5
J3 Range	J3-INF	J3-INF-174A	N	03/05/2021	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-160A	N	03/05/2021	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-160A	N	03/05/2021	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-160A	N	03/05/2021	Process Water	0	0
Central Impact Area	MW-106M1	MW-106M1_S21	N	03/05/2021	Ground Water	170.5	180.5
Demolition Area 1	PR-EFF	PR-EFF-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-180A	N	03/04/2021	Process Water	0	0
Central Impact Area	MW-96M2	MW-96M2_S21	N	03/04/2021	Ground Water	160	170
Demolition Area 1	PR-MID-1	PR-MID-1-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-180A	N	03/04/2021	Process Water	0	0
Central Impact Area	MW-96M1	MW-96M1_S21	N	03/04/2021	Ground Water	206	216
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-180A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-56A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-56A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-56A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-56A	N	03/04/2021	Process Water	0	0
Central Impact Area	MW-626M2	MW-626M2_S21	N	03/04/2021	Ground Water	237.2	247.2
Central Impact Area	MW-626M1	MW-626M1_S21	N	03/04/2021	Ground Water	282.2	292.2
Demolition Area 1	D1-EFF	D1-EFF-128A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-128A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-128A	N	03/04/2021	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-128A	N	03/04/2021	Process Water	0	0
Central Impact Area	MW-644M2	MW-644M2_S21	N	03/04/2021	Ground Water	230.9	240.9
Central Impact Area	MW-644M1	MW-644M1_S21	N	03/04/2021	Ground Water	275.9	285.9
Central Impact Area	MW-442M2	MW-442M2_S21	N	03/03/2021	Ground Water	215.3	225.3
Central Impact Area	MW-442M1	MW-442M1_S21	N	03/03/2021	Ground Water	247.6	257.6
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-150A	N	03/03/2021	Process Water	0	0
Central Impact Area	MW-03M2	MW-03M2_S21	N	03/03/2021	Ground Water	180	185
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-150A	N	03/03/2021	Process Water	0	0
Central Impact Area	MW-204M2	MW-204M2_S21	N	03/03/2021	Ground Water	76	86
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-150A	N	03/03/2021	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-150A	N	03/03/2021	Process Water	0	0
Central Impact Area	MW-204M1	MW-204M1_S21	N	03/03/2021	Ground Water	141	151
Central Impact Area	MW-204M1	MW-204M1_S21D	FD	03/03/2021	Ground Water	141	151

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 to 31 March 2021

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Eastern	J2E-INF-I	J2E-INF-I-150A	N	03/03/2021	Process Water	0	0
Central Impact Area	CIA2-EFF	CIA2-EFF-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-86A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA3-EFF	CIA3-EFF-57A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-57A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-57A	N	03/02/2021	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-57A	N	03/02/2021	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-174A	N	03/01/2021	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-174A	N	03/01/2021	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-89A	N	03/01/2021	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-89A	N	03/01/2021	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-89A	N	03/01/2021	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-89A	N	03/01/2021	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received March 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
Central Impact Area	MW-38M4	MW-38M4_S21	132	142	02/18/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.043	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-38M4	MW-38M4_S21	132	142	02/18/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.058	J	µg/L	400		0.036	0.20
Central Impact Area	MW-38M4	MW-38M4_S21	132	142	02/18/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.41		µg/L	0.60		0.034	0.20
Central Impact Area	MW-38M3	MW-38M3_S21	170	180	02/18/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.054	J	µg/L	400		0.036	0.20
Central Impact Area	MW-38M3	MW-38M3_S21	170	180	02/18/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.073	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-38M3	MW-38M3_S21	170	180	02/18/2021	SW6850	Perchlorate	0.12	J	µg/L	2.0		0.030	0.20
Central Impact Area	MW-38M3	MW-38M3_S21	170	180	02/18/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.43		µg/L	0.60		0.034	0.20
Central Impact Area	MW-25	MW-25_S21	108	118	02/18/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.12	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-25	MW-25_S21	108	118	02/18/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	µg/L	400		0.036	0.20
Central Impact Area	MW-25	MW-25_S21	108	118	02/18/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-113M2	MW-113M2_S21	190	200	02/17/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.065	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-113M1	MW-113M1_S21	240	250	02/17/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.087	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-725M1	MW-725M1_S21	145.2	155.2	02/17/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		µg/L	400		0.036	0.20
Central Impact Area	MW-725M1	MW-725M1_S21	145.2	155.2	02/17/2021	SW6850	Perchlorate	1.5		µg/L	2.0		0.030	0.20
Central Impact Area	MW-725M1	MW-725M1_S21	145.2	155.2	02/17/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-725M1	MW-725M1_S21D	145.2	155.2	02/17/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.2		µg/L	400		0.036	0.20
Central Impact Area	MW-725M1	MW-725M1_S21D	145.2	155.2	02/17/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	3.6		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-93M2	MW-93M2_S21	145	155	02/11/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.19	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-93M1	MW-93M1_S21	185	195	02/11/2021	SW6850	Perchlorate	0.062	J	µg/L	2.0		0.030	0.20
Central Impact Area	MW-93M1	MW-93M1_S21	185	195	02/11/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.19	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-115S	MW-115S_S21	116	126	02/11/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.052	J	µg/L	400		0.036	0.20
Central Impact Area	MW-115S	MW-115S_S21	116	126	02/11/2021	SW8330	2,4,6-Trinitrotoluene	0.088	J	µg/L	2.0		0.041	0.20
Central Impact Area	MW-115S	MW-115S_S21	116	126	02/11/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.14	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-235M1	MW-235M1_S21	154	164	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.16	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	1,3-Dinitrobenzene	0.042	J	µg/L	1.0		0.022	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	Picric acid	0.083	J	µg/L	365		0.022	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	2-Amino-4,6-dinitrotoluene	0.17	J	µg/L	7.3		0.020	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	1,3,5-Trinitrobenzene	0.20		µg/L	1090		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.21		µg/L	7.3		0.027	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.28		µg/L	400		0.036	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	2,4,6-Trinitrotoluene	1.8		µg/L	2.0		0.041	0.20
Central Impact Area	MW-91S	MW-91S_S21	124	134	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	1,3-Dinitrobenzene	0.043	J	µg/L	1.0		0.022	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	Picric acid	0.077	J	µg/L	365		0.022	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	2-Amino-4,6-dinitrotoluene	0.17	J	µg/L	7.3		0.020	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	1,3,5-Trinitrobenzene	0.20		µg/L	1090		0.023	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.20		µg/L	7.3		0.027	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.28		µg/L	400		0.036	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	2,4,6-Trinitrotoluene	1.8		µg/L	2.0		0.041	0.20
Central Impact Area	MW-91S	MW-91S_S21D	124	134	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.3		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-91M1	MW-91M1_S21	170	180	02/10/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.26		µg/L	400		0.036	0.20
Central Impact Area	MW-91M1	MW-91M1_S21	170	180	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.4		µg/L	0.60	X	0.034	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	1,3-Dinitrobenzene	0.057	J	µg/L	1.0		0.022	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit
April 07, 2021

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received March 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
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	Picric acid	0.089	J	µg/L	365		0.022	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.11	J	µg/L	400		0.036	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	2,4-Dinitrotoluene	0.18	J	µg/L	5.0		0.15	0.40
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	1,3,5-Trinitrobenzene	0.22		µg/L	1090		0.023	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	2-Amino-4,6-dinitrotoluene	0.43		µg/L	7.3		0.020	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.46	J	µg/L	0.60		0.034	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.61		µg/L	7.3		0.027	0.20
Central Impact Area	OW-1	OW-1_S21	126	136	02/10/2021	SW8330	2,4,6-Trinitrotoluene	2.8		µg/L	2.0	X	0.041	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	1,3-Dinitrobenzene	0.065	J	µg/L	1.0		0.022	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	Picric acid	0.087	J	µg/L	365		0.022	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.099	J	µg/L	400		0.036	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	2,4-Dinitrotoluene	0.17	J	µg/L	5.0		0.15	0.40
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	1,3,5-Trinitrobenzene	0.21		µg/L	1090		0.023	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.40	J	µg/L	0.60		0.034	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	2-Amino-4,6-dinitrotoluene	0.43		µg/L	7.3		0.020	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.61		µg/L	7.3		0.027	0.20
Central Impact Area	OW-1	OW-1_S21D	126	136	02/10/2021	SW8330	2,4,6-Trinitrotoluene	2.7		µg/L	2.0	X	0.041	0.20
Central Impact Area	OW-2	OW-2_S21	175	185	02/10/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.099	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-207M1	MW-207M1_S21	254	264	02/09/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		µg/L	0.60		0.034	0.20
Central Impact Area	MW-176M2	MW-176M2_S21	229	239	02/09/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.32		µg/L	0.60		0.034	0.20
Central Impact Area	MW-176M1	MW-176M1_S21	270	280	02/09/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-90S	MW-90S_S21	118	128	02/08/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	µg/L	400		0.036	0.20
Central Impact Area	MW-90S	MW-90S_S21	118	128	02/08/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-90S	MW-90S_S21D	118	128	02/08/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	µg/L	400		0.036	0.20
Central Impact Area	MW-90S	MW-90S_S21D	118	128	02/08/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.1		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-90M1	MW-90M1_S21	145	155	02/08/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.18	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-01S	MW-01S_S21	114	124	02/08/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.11	J	µg/L	400		0.036	0.20
Central Impact Area	MW-01S	MW-01S_S21	114	124	02/08/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.37		µg/L	0.60		0.034	0.20
Central Impact Area	MW-01M2	MW-01M2_S21	160	165	02/08/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.088	J	µg/L	400		0.036	0.20
Central Impact Area	MW-01M2	MW-01M2_S21	160	165	02/08/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-223D	MW-223D_S21	260	270	02/04/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.057	J	µg/L	0.60		0.034	0.20
Central Impact Area	MW-485M1	MW-485M1_S21	125.32	135.32	02/03/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.089	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-485M1	MW-485M1_S21	125.32	135.32	02/03/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		µg/L	400		0.036	0.20
Central Impact Area	MW-485M1	MW-485M1_S21	125.32	135.32	02/03/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.5		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-485M1	MW-485M1_S21D	125.32	135.32	02/03/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.098	J	µg/L	7.3		0.027	0.20
Central Impact Area	MW-485M1	MW-485M1_S21D	125.32	135.32	02/03/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	1.1		µg/L	400		0.036	0.20
Central Impact Area	MW-485M1	MW-485M1_S21D	125.32	135.32	02/03/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.5		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-477M2	MW-477M2_S21	145.62	155.62	02/03/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.78		µg/L	400		0.036	0.20
Central Impact Area	MW-477M2	MW-477M2_S21	145.62	155.62	02/03/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	6.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-477M2	MW-477M2_S21D	145.62	155.62	02/03/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.77		µg/L	400		0.036	0.20
Central Impact Area	MW-477M2	MW-477M2_S21D	145.62	155.62	02/03/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	6.0		µg/L	0.60	X	0.034	0.20
Central Impact Area	MW-37M2	MW-37M2_S21	145	155	02/02/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.25		µg/L	0.60		0.034	0.20
Central Impact Area	MW-40S	MW-40S_S21	115.5	126	02/02/2021	SW8330	4-Amino-2,6-dinitrotoluene	0.075	J	µg/L	7.3		0.027	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit
April 07, 2021

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received March 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
Central Impact Area	MW-40M1	MW-40M1_S21	132.5	142.5	02/02/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.33		µg/L	0.60		0.034	0.20
Central Impact Area	MW-107M2	MW-107M2_S21	125	135	02/02/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.16	J	µg/L	400		0.036	0.20
Central Impact Area	MW-107M2	MW-107M2_S21	125	135	02/02/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.91		µg/L	0.60	X	0.034	0.20
J2 Range Eastern	J2MW-04M2	J2MW-04M2_S21	210	220	02/01/2021	SW6850	Perchlorate	0.071	J	µg/L	2.0		0.030	0.20
J2 Range Eastern	J2MW-04M1	J2MW-04M1_S21	257	267	02/01/2021	SW6850	Perchlorate	0.080	J	µg/L	2.0		0.030	0.20
J2 Range Eastern	J2MW-04M1	J2MW-04M1_S21	257	267	02/01/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10	J	µg/L	400		0.036	0.20
J2 Range Eastern	MW-339M1	MW-339M1_S21	233	243	01/27/2021	SW6850	Perchlorate	0.33		µg/L	2.0		0.030	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21	202.73	212.73	01/27/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.4		µg/L	0.60	X	0.034	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21	202.73	212.73	01/27/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	7.1		µg/L	400		0.036	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21	202.73	212.73	01/27/2021	SW6850	Perchlorate	9.3		µg/L	2.0	X	0.030	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21D	202.73	212.73	01/27/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	4.2	J	µg/L	0.60	X	0.034	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21D	202.73	212.73	01/27/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	6.6	J	µg/L	400		0.036	0.20
J2 Range Eastern	MW-368M2	MW-368M2_S21D	202.73	212.73	01/27/2021	SW6850	Perchlorate	9.3		µg/L	2.0	X	0.030	0.20
J2 Range Eastern	MW-324M2	MW-324M2_S21	203.74	214.74	01/27/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.076	J	µg/L	0.60		0.034	0.20
J2 Range Eastern	MW-324M2	MW-324M2_S21	203.74	214.74	01/27/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.28		µg/L	400		0.036	0.20
J2 Range Eastern	MW-324M2	MW-324M2_S21	203.74	214.74	01/27/2021	SW6850	Perchlorate	0.93		µg/L	2.0		0.030	0.20
J2 Range Eastern	MW-324M1	MW-324M1_S21	234.85	244.85	01/27/2021	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.062	J	µg/L	0.60		0.034	0.20
J2 Range Eastern	MW-324M1	MW-324M1_S21	234.85	244.85	01/27/2021	SW6850	Perchlorate	0.28		µg/L	2.0		0.030	0.20
J2 Range Eastern	MW-324M1	MW-324M1_S21	234.85	244.85	01/27/2021	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.31		µg/L	400		0.036	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit
April 07, 2021

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

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

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Joint Base Cape Cod, IAGWSP
KGS 2019 PFAS MW&INF
J1 Range Northern

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

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

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

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KGS 2019 PFAS MW&INF
J2 Range Eastern

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

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

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

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

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

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

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

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KGS 2019 PFAS MW&INF
J3 Range

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

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

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

PFAS Summary Report – Groundwater
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KGS 2020 J1 Ranges SPM Fall
J1 Range Northern

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

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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**
PFAS 21 Cmps	Results (ng/L)	Results (ng/L)	Results (ng/L)
6:2 Fluorotelomer sulfonate (6:2 FTS)	20.0 U	18.0 U	19.0 U
8:2 Fluorotelomer sulfonate (8:2 FTS)	9.80 U	9.20 U	9.30 U
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	9.80 U	9.20 U	9.30 U
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	9.80 U	9.20 U	9.30 U
Perfluorobutanesulfonic acid (PFBS)	0.980 U	0.920 U	0.930 U
Perfluorobutanoic acid (PFBA)	1.50 U	1.40 U	1.40 U
Perfluorodecanesulfonic acid (PFDS)	1.50 U	1.40 U	1.40 U
Perfluorodecanoic acid (PFDA)	**0.730 J**	**1.70 J**	0.930 U
Perfluorododecanoic acid (PFDoA)	1.50 U	1.40 U	1.40 U
Perfluoroheptanesulfonic acid (PFHpS)	0.980 U	0.920 U	0.930 U
Perfluoroheptanoic acid (PFHpA)	1.50 U	1.40 U	1.40 U
Perfluorohexanesulfonic acid (PFHxS)	0.980 U	0.920 U	0.930 U
Perfluorohexanoic acid (PFHxA)	0.980 U	0.920 U	0.930 U
Perfluorononanoic acid (PFNA)	**2.20**	**0.650 J**	1.40 U
Perfluorooctane sulfonate (PFOS)	2.90 U	2.80 U	2.80 U
Perfluorooctanesulfonamide (FOSA)	2.90 U	2.80 U	2.80 U
Perfluorooctanoic acid (PFOA)	1.50 U	1.40 U	1.40 U
Perfluoropentanoic acid (PFPA)	**0.750 J**	**0.410 J**	0.930 U
Perfluorotetradecanoic acid (PFTA)	2.90 U	2.80 U	2.80 U
Perfluorotridecanoic acid (PFTrDA)	2.90 U	2.80 U	2.80 U
Perfluoroundecanoic acid (PFUnA)	**1.00 J**	**6.00**	1.40 U
†PFOS + PFOA (EPA)	**0.00**	**0.00**	**0.00**
‡PFOS + PFOA + PFDA + PFHpA + PFHxS + PFNA (MassDEP)	**2.93**	**2.35**	**0.00**
§Sum of All Compounds Collected	**4.68**	**8.76**	**0.00**

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KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

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

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J2 Range Northern

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

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J2 Range Northern

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

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J2 Range Northern

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

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J2 Range Northern

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

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Joint Base Cape Cod, IAGWSP
KGS 2020 J2 Ranges SPM Fall
J2 Range Northern

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

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KGS 2020 J3 Range SPM Fall
J3 Range

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

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J3 Range

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

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J3 Range

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

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KGS 2020 J3 Range SPM Fall
J3 Range

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

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Joint Base Cape Cod, IAGWSP
KGS 2021 J2 Ranges SPM Spring
J2 Range Northern

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

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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