

**MONTHLY PROGRESS REPORT #264
FOR MARCH 2019**

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 2019.

1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of March 2019.

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 gpm, with over 2.630 billion gallons of water treated and re-injected as of 29 March 2019. The following Frank Perkins Road Treatment Facility shutdown(s) occurred in the March reporting period:

- The Frank Perkins Treatment Facility shut down due to a planned JBCC power outage. The facility shut down at 2100 h on 26 March 2019 and was restarted at 0750 h on 27 March 2019.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM, with over 609.7 million gallons of water treated and re-injected as of 29 March 2019. The following Pew Road MTU shutdown(s) occurred in the March reporting period:

- The Pew Road MTU shut down due to a planned JBCC power outage. The MTU shut down at 2100 h on 26 March 2019 and was restarted at 0830 h on 27 March 2019.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm, with over 226.1 million gallons of water treated and re-injected as of 29 March 2019. No shutdowns of the Base Boundary MTU occurred in the March reporting period.

The Leading Edge system continues to operate at a flow rate of 100 gpm, with over 139.2 million gallons of water treated and re-injected as of 29 March 2019. No shutdowns of the Leading Edge system occurred in the March reporting period.

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 continues to operate at a flow rate of 225 gpm. As of 29 March 2019, over 1.106 billion gallons of water have been treated and re-injected. No shutdowns of the Northern Treatment Building occurred in the March reporting period.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 29 March 2019, over 1.563 billion gallons of water have been treated and re-injected. The following J-2 Range Northern system shutdown(s) occurred in the March reporting period:

- MTUs E and F were shut down to replace a leaking hose on the MTU E effluent. The MTUs were turned off at 0830 h on 29 March 2019 and were restarted at 1003 h on 29 March 2019.
- MTU E shut down due to a "High Inlet Pressure" alarm due to a PLC communication error caused by the extremely cold temperature. MTU E shut down at 0324 h on 07 March 2019 and was restarted at 0734 h on 07 March 2019.

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 29 March 2019, over 1.212 billion gallons of water have been treated and re-injected. No shutdowns of MTUs H and I occurred in the March reporting period.

MTU J continues to operate at a flow rate of 120 gpm. As of 29 March 2019, over 552.1 million gallons of water have been treated and re-injected. No shutdowns of MTU J occurred in the March reporting period.

MTU K continues to operate at a flow rate of 125 gpm. As of 29 March 2019, over 667.4 million gallons of water have been treated and re-injected. No shutdowns of MTU K occurred in the March reporting period.

J-3 Range Groundwater RA

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

The J-3 system is currently operating at a flow rate of 255 gpm (while J3EW0032 is running at 45 gpm instead of 65 gpm). As of 29 March 2019, over 1.223 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdown(s) occurred in the March reporting period.

- The system shut down due to an FS-12 shut down. The system shut down at 0105 h on 12 March 2019 and was restarted at 0749 h on 12 March 2019.

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 29 March 2019, over 529.8 million gallons of water have been treated and re-injected. No shutdowns of the J-1 Range Southern system occurred in the March reporting period.

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 29 March 2019, over 686.2 million gallons of water have been treated and re-injected. No shutdowns of the J-1 Range Northern MTU occurred in the March reporting period.

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 29 March 2019, over 1.643 billion gallons of water have been treated and re-injected. The following CIA treatment facility shutdowns occurred in the March reporting period:

- System 1 shut down due to a planned JBCC power outage. The MTU shut down at 2100 h on 26 March 2019 and restarted at 2140 h on 27 March 2019.
- System 2 shut down due to a planned JBCC power outage. The MTU shut down at 2100 h on 26 March 2019 and was restarted at 0905 h on 27 March 2019.
- System 1 shut down for a planned carbon exchange. System 1 was turned off at 1000 h on 19 March 2019, carbon vessels #2 and #5 were exchanged on 20 March 2019, and the system was restarted at 0755 h on 21 March 2019.
- System 2 shut down for a planned carbon exchange. System 2 was turned off at 0920 h on 20 March 2019, carbon vessels #2 and #5 were exchanged on 21 March 2019, and the system was restarted at 0726 h on 22 March 2019.

SUMMARY OF ACTIONS TAKEN

CIA

- Groundwater sampling within the Central Impact Area SPM program.
- Performed routine inspections of BEM cover at the Central Impact Area to ensure cover is secure and intact.
- Performed BEM soil sampling/excavation, liner inspection/repair, and returned soil to cell.
- Performed stakeout of 15-acre P3A2.
- Exchanged System 3 bag filters.

Demolition Area 1

- Exchanged bag filters at the Leading Edge MTU.
- Exchanged bag filters at the Pew Road MTU.

Small Arms Ranges

- No Activity

J-1 Range

- Exchanged bag filters at the J-1 Southern MTU.

J-2 Range

- Exchanged bag filters at the J-2 Range Eastern MTU J.
- Exchanged bag filters at the J-2 Range Northern MTU F.

J-3 Range

- No Activity

L Range

- No Activity

Training Areas

- No Activity

Other

- Process water samples were collected from the Central Impact Area, Demolition Area 1, J-1 Range Northern, J-1 Range Southern, J-2 Range Eastern, J-2 Range Northern, and J-3 Range.
- Groundwater samples were collected from the Central Impact Area and Northwest Corner.

JBCC IAGWSP Tech Update Meeting Minutes 14 March 2019

Project and Fieldwork Update

Currently there is no drilling. Long term monitoring sampling is underway in the Central Impact Area. All treatment systems are up and running. The J-3 Range treatment system went down earlier in the week due to a problem with the FS-12 system but it is back up and running. MassDEP said they had noticed sporadic low-level concentrations of perchlorate in the effluent of IAGWSP treatment systems. It was noted that lower detection limits were causing minor intermittent detections.

The J-1 South project note was signed so the team is working on a mobilization date for the drillers, most likely early spring. IAGWSP needs to make some minor changes to the CIA wells project note and will re-issue it for review and signature. IAGWSP will be meeting with the Pastor of the Pocasset Baptist Church near the leading edge of the Demolition Area 1 Plume to discuss the possibility of installing a monitoring well on the property.

Since the last tech update, there has been no new fieldwork in the Small Arms Ranges. Contractors will be coming back this spring to perform the additional lifts at D Range and Former B Range. A project note outlining the proposed XRF screening was distributed yesterday. MassDEP noted that they are in the process of drafting a new policy updating their sampling procedures that includes the averaging of replicates and suggested IAGWSP may want to wait until the new procedures are finalized as it could impact the work.

USACE is working on getting Dawson under another contract to perform the KD Range soil removal outlined in a project note that was submitted at the end of February. They will also be tasked with doing the EM-61 and munitions removal work at the Former E Range, monitoring well roads, and EM-61 two grids at the J-3 Range.

For the Central Impact Area 2019 field season, USACE is waiting to receive an updated schedule from Parsons. They initially wanted to come up in March and begin with vegetation clearance but their revised safety plan wasn't approved and needs further revision. There are some activities they could do in the interim e.g. stake out transects and inspection and sampling of the BEM liner. USACE will let the team know the schedule as soon as it is received. EPA asked if it is possible for the task of inspecting the liner to be scheduled for March 27th so they can observe. It was agreed that it would be prudent for the group to sit down with the contractors once they mobilize to discuss the upcoming field season.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The next meeting of the JBCC Cleanup Team (JBCCCT) has yet to be scheduled (previous meeting was 13 March 2019). The Cleanup Team meeting discusses late breaking news and responses to action items, as well as updates from the IAGWSP and the Installation Restoration Program (IRP). The JBCCCT meetings provide a forum for community input regarding issues related to both the IRP and the IAGWSP.

SUMMARY OF DATA RECEIVED

Table 1 summarizes sampling for all media from 1 March to 31 March 2019. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 March to 31 March 2019. The March treatment system influent summary is not included due to no validated perchlorate or explosives results available at report submittal time. 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.

Twelve operable units (OU) are under investigation and cleanup at Camp Edwards. The OUs include: 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 Areas, 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).

2. DELIVERABLES SUBMITTED

Deliverables submitted during the reporting period include the following:

- | | |
|----------------------------------------------------------------------------------------------------------|-------------|
| • Monthly Progress Report No. 263 for February 2019 | 11 Mar 2019 |
| • Memorandum of Resolution for the Draft Central Impact Area 2018 Annual Environmental Monitoring Report | 4 Mar 2019 |
| • Final Central Impact Area 2018 Annual Environmental Monitoring Report | 8 Mar 2019 |

3. SCHEDULED ACTIONS

The following documents are being prepared or revised during April 2019:

Training Areas

- IAGWSP to submit project notes on supplemental work.

Annual Reports/ Environmental Monitoring Reports/Work Plans

- EPA and MassDEP to provide feedback/approval of responses to comments on draft J-2 Range Northern and J-2 Range Eastern Annual Monitoring.
- IAGWSP to provide responses to comments on draft J-3 Range Annual Monitoring Report.

Central Impact Area

- EPA and MassDEP to provide comments on 2019 Work Plan project note.
- EPA and MassDEP to provide comments on 2018 Source Report.

Miscellaneous

- IAGWSP to provide responses to comments on the draft Five Year Review report.
- MassDEP to provide approval/feedback on RCL for completion of work report for J-2 Range geophysical work and additional well locations.
- EPA and MassDEP to provide feedback/approval on responses to comments and a revised project note for PFAS sampling for a few wells downgradient of OB/OD sites. (Demolition Area 1, J-2 North, J-2 East, and J-3 Range).
- EPA to provide feedback on recommendations for disposal of the rockets found in the CIA and on the J-2 Range.
- EPA to provide feedback/concurrence on J-3 Barrage Rocket EM-61 confirmatory survey project note.
- EPA and MassDEP to provide comments on KD Range project note.

TABLE 1
Sampling Progress: 1 March to 31 March 2019

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-617M2	MW-617M2_S19	N	03/28/2019	Ground Water	118.3	128.3
Central Impact Area	MW-617M1	MW-617M1_S19	N	03/28/2019	Ground Water	175.8	185.8
Central Impact Area	MW-644M2	MW-644M2_S19	N	03/28/2019	Ground Water	230.9	240.9
Central Impact Area	MW-644M1	MW-644M1_S19	N	03/28/2019	Ground Water	275.9	285.9
Central Impact Area	MW-626M2	MW-626M2_S19	N	03/28/2019	Ground Water	237.2	247.2
Central Impact Area	MW-626M1	MW-626M1_S19	N	03/28/2019	Ground Water	282.2	292.2
Central Impact Area	MW-441M2	MW-441M2_S19	N	03/27/2019	Ground Water	109.5	119.5
Central Impact Area	MW-441M1	MW-441M1_S19	N	03/27/2019	Ground Water	204.6	214.6
Central Impact Area	MW-628M2	MW-628M2_S19	N	03/27/2019	Ground Water	120.8	130.8
Central Impact Area	MW-628M1	MW-628M1_S19	N	03/27/2019	Ground Water	230.8	240.8
Central Impact Area	MW-350M2	MW-350M2_S19	N	03/26/2019	Ground Water	126	136
Central Impact Area	MW-608M4	MW-608M4_S19	N	03/26/2019	Ground Water	185.4	195.4
Central Impact Area	MW-608M3	MW-608M3_S19	N	03/26/2019	Ground Water	220.4	230.4
Central Impact Area	MW-608M2	MW-608M2_S19	N	03/26/2019	Ground Water	253.4	263.4
Central Impact Area	MW-608M2	MW-608M2_S19D	FD	03/26/2019	Ground Water	253.4	263.4
Central Impact Area	MW-608M1	MW-608M1_S19	N	03/26/2019	Ground Water	267.4	277.4
Central Impact Area	MW-323M2	MW-323M2_S19	N	03/25/2019	Ground Water	120	130
Central Impact Area	MW-323M1	MW-323M1_S19	N	03/25/2019	Ground Water	195	205
Central Impact Area	MW-338S	MW-338S_S19	N	03/25/2019	Ground Water	72	82
Central Impact Area	MW-338M2	MW-338M2_S19	N	03/25/2019	Ground Water	119	129
Northwest Corner	MW-338M2	MW-338M2_S19	N	03/25/2019	Ground Water	119	129
Central Impact Area	MW-338M1	MW-338M1_S19	N	03/25/2019	Ground Water	189	199
Northwest Corner	MW-338M1	MW-338M1_S19	N	03/25/2019	Ground Water	189	199
Central Impact Area	MW-249M2	MW-249M2_S19	N	03/21/2019	Ground Water	174	184
Central Impact Area	MW-633M2	MW-633M2_S19	N	03/21/2019	Ground Water	197	207
Central Impact Area	MW-633M1	MW-633M1_S19	N	03/21/2019	Ground Water	282	292
Central Impact Area	MW-149M1	MW-149M1_S19	N	03/21/2019	Ground Water	237.5	247.5
Central Impact Area	MW-124M1	MW-124M1_S19	N	03/21/2019	Ground Water	234	244
Central Impact Area	MW-50M1	MW-50M1_S19	N	03/19/2019	Ground Water	207	217
Central Impact Area	MW-209M2	MW-209M2_S19	N	03/19/2019	Ground Water	220	230
Central Impact Area	MW-209M1	MW-209M1_S19	N	03/19/2019	Ground Water	240	250
Central Impact Area	MW-209M1	MW-209M1_S19D	FD	03/19/2019	Ground Water	240	250
Central Impact Area	MW-609M2	MW-609M2_S19	N	03/19/2019	Ground Water	182.39	192.39
Central Impact Area	MW-609M1	MW-609M1_S19	N	03/19/2019	Ground Water	210.39	220.39
Central Impact Area	MW-609M1	MW-609M1_S19D	FD	03/19/2019	Ground Water	210.39	220.39
Central Impact Area	MW-178M1	MW-178M1_S19	N	03/18/2019	Ground Water	257	267
Central Impact Area	MW-212M1	MW-212M1_S19	N	03/18/2019	Ground Water	333	343
Central Impact Area	MW-51M2	MW-51M2_S19	N	03/18/2019	Ground Water	203	213
Central Impact Area	MW-51M1	MW-51M1_S19	N	03/18/2019	Ground Water	234	244
Central Impact Area	MW-51D	MW-51D_S19	N	03/18/2019	Ground Water	264	274
Central Impact Area	MW-111M1	MW-111M1_S19	N	03/14/2019	Ground Water	224	234
Central Impact Area	MW-208M1	MW-208M1_S19	N	03/14/2019	Ground Water	195	205
Central Impact Area	MW-223M2	MW-223M2_S19	N	03/14/2019	Ground Water	185	195
Central Impact Area	MW-223M1	MW-223M1_S19	N	03/14/2019	Ground Water	211	221
Central Impact Area	MW-223D	MW-223D_S19	N	03/14/2019	Ground Water	260	270
Central Impact Area	MW-87M2	MW-87M2_S19	N	03/13/2019	Ground Water	169	179
Central Impact Area	MW-87M1	MW-87M1_S19	N	03/13/2019	Ground Water	194	204
Central Impact Area	MW-86S	MW-86S_S19	N	03/13/2019	Ground Water	143	153
Central Impact Area	MW-86M2	MW-86M2_S19	N	03/13/2019	Ground Water	158	168
Central Impact Area	MW-86M1	MW-86M1_S19	N	03/13/2019	Ground Water	208	218
Central Impact Area	MW-88M2	MW-88M2_S19	N	03/12/2019	Ground Water	213	223
Central Impact Area	MW-88M2	MW-88M2_S19D	FD	03/12/2019	Ground Water	213	223
Central Impact Area	MW-88M1	MW-88M1_S19	N	03/12/2019	Ground Water	233	243
Central Impact Area	MW-207M1	MW-207M1_S19	N	03/12/2019	Ground Water	254	264
Central Impact Area	MW-618M2	MW-618M2_S19	N	03/12/2019	Ground Water	190.5	200.5
Central Impact Area	MW-618M1	MW-618M1_S19	N	03/12/2019	Ground Water	238.5	248.5
Central Impact Area	MW-95M2	MW-95M2_S19	N	03/11/2019	Ground Water	167	177
Central Impact Area	MW-95M1	MW-95M1_S19	N	03/11/2019	Ground Water	202	212
Central Impact Area	MW-89M3	MW-89M3_S19	N	03/11/2019	Ground Water	174	184
Central Impact Area	MW-89M2	MW-89M2_S19	N	03/11/2019	Ground Water	214	224
Central Impact Area	MW-89M2	MW-89M2_S19D	FD	03/11/2019	Ground Water	214	224

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 March to 31 March 2019

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-89M1	MW-89M1_S19	N	03/11/2019	Ground Water	234	244
Central Impact Area	MW-108M4	MW-108M4_S19	N	03/07/2019	Ground Water	240	250
Demolition Area 1	PR-EFF	PR-EFF-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-156A	N	03/07/2019	Process Water	0	0
Central Impact Area	MW-108M1	MW-108M1_S19	N	03/07/2019	Ground Water	297	307
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-156A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-32A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-32A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-32A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-32A	N	03/07/2019	Process Water	0	0
Central Impact Area	MW-176M2	MW-176M2_S19	N	03/07/2019	Ground Water	229	239
Central Impact Area	MW-176M1	MW-176M1_S19	N	03/07/2019	Ground Water	270	280
Demolition Area 1	D1-EFF	D1-EFF-104A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-104A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-104A	N	03/07/2019	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-104A	N	03/07/2019	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-150A	N	03/06/2019	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-150A	N	03/06/2019	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-150A	N	03/06/2019	Process Water	0	0
J3 Range	J3-INF	J3-INF-150A	N	03/06/2019	Process Water	0	0
Central Impact Area	MW-103M2	MW-103M2_S19	N	03/06/2019	Ground Water	282	292
J1 Range Southern	J1S-EFF	J1S-EFF-136A	N	03/06/2019	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-136A	N	03/06/2019	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-136A	N	03/06/2019	Process Water	0	0
Central Impact Area	MW-103M1	MW-103M1_S19	N	03/06/2019	Ground Water	298	308
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-150A	N	03/06/2019	Process Water	0	0
Central Impact Area	MW-102M2	MW-102M2_S19	N	03/06/2019	Ground Water	237	247
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-150A	N	03/06/2019	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-150A	N	03/06/2019	Process Water	0	0
Central Impact Area	MW-102M1	MW-102M1_S19	N	03/06/2019	Ground Water	267	277
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-150A	N	03/06/2019	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-65A	N	03/06/2019	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-65A	N	03/06/2019	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-65A	N	03/06/2019	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-65A	N	03/06/2019	Process Water	0	0
Central Impact Area	MW-123M2	MW-123M2_S19	N	03/05/2019	Ground Water	236	246
Central Impact Area	MW-123M1	MW-123M1_S19	N	03/05/2019	Ground Water	291	301
Central Impact Area	CIA2-EFF	CIA2-EFF-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	MW-23M1	MW-23M1_S19	N	03/05/2019	Ground Water	225	235
Central Impact Area	CIA1-INF	CIA1-INF-62A	N	03/05/2019	Process Water	0	0
Central Impact Area	MW-23D	MW-23D_S19	N	03/05/2019	Ground Water	272	282
Central Impact Area	CIA3-EFF	CIA3-EFF-33A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-33A	N	03/05/2019	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-33A	N	03/05/2019	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 March to 31 March 2019

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	CIA3-INF	CIA3-INF-33A	N	03/05/2019	Process Water	0	0
Central Impact Area	MW-202M1	MW-202M1_S19	N	03/04/2019	Ground Water	264	274
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-126A	N	03/04/2019	Process Water	0	0
Central Impact Area	MW-615M2	MW-615M2_S19	N	03/04/2019	Ground Water	200	210
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-126A	N	03/04/2019	Process Water	0	0
Central Impact Area	MW-615M1	MW-615M1_S19	N	03/04/2019	Ground Water	260	270
Central Impact Area	MW-615M1	MW-615M1_S19D	FD	03/04/2019	Ground Water	260	270
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-126A	N	03/04/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-126A	N	03/04/2019	Process Water	0	0

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received March 2019

Area of Concern	Location ID	Field Sample ID	Top Depth (ft bgs)	Bottom Depth (ft bgs)	Date Sampled	Test Method	Analyte	Result Value	Qualifier	Units	MCL/HA	> MCL/HA	MDL	RL
J3 Range	MW-637M2	MW-637M2_S19	214.1	224.1	01/08/2019	SW6850	Perchlorate	3.1		ug/L	2.0	X	0.012	0.20
J3 Range	MW-637M2	MW-637M2_S19D	214.1	224.1	01/08/2019	SW6850	Perchlorate	3.3		ug/L	2.0	X	0.012	0.20
J3 Range	J3EWIP1	J3EWIP1_S19	153	193	01/07/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		ug/L	0.60		0.036	0.20
J3 Range	J3EWIP1	J3EWIP1_S19	153	193	01/07/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.24		ug/L	400		0.025	0.20
J3 Range	J3EWIP1	J3EWIP1_S19	153	193	01/07/2019	SW6850	Perchlorate	0.60		ug/L	2.0		0.012	0.20
J3 Range	90EW0001	90EW0001_S19	83.1	143.83	01/07/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.10	J	ug/L	400		0.025	0.20
J3 Range	90EW0001	90EW0001_S19	83.1	143.83	01/07/2019	SW6850	Perchlorate	0.20		ug/L	2.0		0.012	0.20
J3 Range	J3EW0032	J3EW0032_S19	102	152	01/07/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.14	J	ug/L	400		0.025	0.20
J3 Range	J3EW0032	J3EW0032_S19	102	152	01/07/2019	SW6850	Perchlorate	0.50		ug/L	2.0		0.012	0.20
J3 Range	J3EW0032	J3EW0032_S19	102	152	01/07/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.60		ug/L	0.60		0.036	0.20
J3 Range	J3EW0032	J3EW0032_S19D	102	152	01/07/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.17	J	ug/L	400		0.025	0.20
J3 Range	J3EW0032	J3EW0032_S19D	102	152	01/07/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.69		ug/L	0.60	X	0.036	0.20
J3 Range	J3EWIP2	J3EWIP2_S19	149.5	169.5	01/07/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.30		ug/L	400		0.025	0.20
J3 Range	J3EWIP2	J3EWIP2_S19	149.5	169.5	01/07/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.42		ug/L	0.60		0.036	0.20
J3 Range	J3EWIP2	J3EWIP2_S19	149.5	169.5	01/07/2019	SW6850	Perchlorate	2.5		ug/L	2.0	X	0.012	0.20
J3 Range	MW-636M2	MW-636M2_S19	110.5	120.5	01/03/2019	SW6850	Perchlorate	0.075	J	ug/L	2.0		0.012	0.20
J3 Range	MW-653M2	MW-653M2_S19	59.3	69.3	01/03/2019	SW6850	Perchlorate	0.071	J	ug/L	2.0		0.012	0.20
J3 Range	MW-653M1	MW-653M1_S19	147.5	157.5	01/03/2019	SW6850	Perchlorate	0.20		ug/L	2.0		0.012	0.20
J3 Range	MW-653M1	MW-653M1_S19	147.5	157.5	01/03/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.51		ug/L	400		0.025	0.20

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