MONTHLY PROGRESS REPORT #266
FOR MAY 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 May to 31 May 2019.

1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of May 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 2.646 billion gallons of water treated and re-injected as of 31 May 2019. No shutdowns of the Frank Perkins Road Treatment Facility occurred during the May reporting period.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 65 GPM, with over 615.6 million gallons of water treated and re-injected as of 31 May 2019. No shutdowns of the Pew Road MTU occurred during the May reporting period.

The Base Boundary MTU continues to operate at a flow rate of 65 gpm, with over 231.3 million gallons of water treated and re-injected as of 31 May 2019. The following shutdown(s) of the Base Boundary MTU occurred during the May reporting period:

- The Base Boundary MTU was turned off to replace a leaking ball valve and a hose on the Lead GAC effluent. The MTU was turned off at 0852 h on 21 May 2019 and was restarted at 1124 h on 21 May 2019.

The Leading Edge system continues to operate at a flow rate of 100 gpm, with over 148.3 million gallons of water treated and re-injected as of 31 May 2019. The following shutdown(s) of the Leading Edge system occurred during the May reporting period:

- The Leading Edge MTU shut down due to a power supply interruption with a “Phase/Voltage Fault” alarm. The MTU shut down at 2247 h on 28 May 2019 and was restarted at 0831 h on 29 May 2019.

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 31 May 2019, over 1.127 billion gallons of water have been treated and re-injected. No shutdowns of the Northern Treatment Building occurred in the May reporting period.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 31 May 2019, over 1.585 billion gallons of water have been treated and re-injected. No shutdowns of the J-2 Range Northern system occurred during the May reporting period.

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 31 May 2019, over 1.235 billion gallons of water have been treated and re-injected. No shutdowns of MTUs H and I occurred during the May reporting period.

MTU J continues to operate at a flow rate of 120 gpm. As of 31 May 2019, over 562.9 million gallons of water have been treated and re-injected. The following shutdown(s) of MTU J occurred during the May reporting period:

- MTU J shut down due to a “Groundwater pump VFD fault” alarm, caused by a power supply interruption. The MTU shut down at 0622 h on 20 May 2019 and was restarted at 0811 h on 20 May 2019.

MTU K continues to operate at a flow rate of 125 gpm. As of 31 May 2019, over 678.7 million gallons of water have been treated and re-injected. No shutdowns of MTU K occurred during the May 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 31 May 2019, over 1.245 billion gallons of water have been treated and re-injected. The following J-3 Range system shutdown(s) occurred during the May reporting period:

- The System shut down due to an FS-12 shutdown. The System shut down at 1630 h on 26 May 2019 and was restarted at 0757 h on 28 May 2019.
- The System shut down due to a “Main system loss of power” alarm, caused by a power supply interruption. The System shut down at 0626 h on 20 May 2019 and was restarted at 0954 h on 20 May 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 31 May 2019, over 540.4 million gallons of water have been treated and re-injected. No shutdowns of the J-1 Range Southern system occurred during the May 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 31 May 2019, over 708.3 million gallons of water have been treated and re-injected. No shutdowns of the J-1 Range Northern MTU occurred during the May 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 31 May 2019, over 1.709 billion gallons of water have been treated and re-injected. No shutdowns of the CIA treatment facility shutdowns occurred during the May reporting period.

SUMMARY OF ACTIONS TAKEN

CIA

- Performed routine inspections of BEM cover to ensure cover is secure and intact.
- Completed vegetation clearance in 15-acre P3A2.
- Continued re-digs/intrusive investigation in P3A1.
- Completed blind seeding and DGM survey for P3A2.

Demolition Area 1

- Groundwater sampling and hydraulic monitoring within the Demo 1 SPM program.
- The Leading Edge MTU bag filters were exchanged on 22 May 2019.
- The Pew Road bag filters were exchanged on 03 May 2019.

Demolition Area 2
- Groundwater sampling within the Demo 2 LTM program.

Small Arms Ranges
- Site grading at C, G, and Former D Range.
- T&D (Bourne Landfill) of soil (11th lift) excavated at Former B Range.
- T&D (Bourne Landfill) of soil (7th lift) excavated at D Range.
- Excavated 7th lift at D Range and collected 50-pt post-excavation samples for lead analysis.
- Excavated 11th lift at Former B Range and collected 50-pt post-excavation samples for lead analysis.

J-1 Range
- Vegetation removal for the J1 South drilling program.
- The bag filters were exchanged on 31 May 2019.
- Groundwater sampling within the J1 North SPM program.

J-2 Range
- No activity.

J-3 Range
- Surface water sampling within the J3 Range SPM program.

L Range
- No activity.

Training Areas
- Site grading at U Range.

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 Demolition Area 1 and Demolition Area 2.

JBCC IAGWSP Tech Update Meeting Minutes

- Meetings on 9 May 2019 and 23 May 2019 were cancelled due to scheduling conflicts.

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 May to 31 May 2019. Table 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 May to 31 May. 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 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).

2. DELIVERABLES SUBMITTED

Deliverables submitted during the reporting period include the following:

• Monthly Progress Report No. 265 for April 2019	11 May 2019
• Use of XRF during Post-DD Soil Removal at Former B and D Ranges, Impact Area Groundwater Study Program	8 May 2019
• Final J-2 Range Eastern and J-2 Range Northern 2018 Environmental Monitoring Report	15 May 2019
• Draft L Range 2019 Annual Environmental Monitoring Report, Impact Area Groundwater Study Program	30 May 2019

3. SCHEDULED ACTIONS

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

- Meetings on 9 May 2019 and 23 May 2019 were cancelled due to scheduling conflicts.

TABLE 1
Sampling Progress: 1 May to 31 May 2019

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-556M2	MW-556M2_S19	N	05/30/2019	Ground Water	111	121
Demolition Area 1	MW-556M1	MW-556M1_S19	N	05/30/2019	Ground Water	153	163
Demolition Area 1	MW-597M2	MW-597M2_S19	N	05/30/2019	Ground Water	118	128
Demolition Area 1	MW-597M1	MW-597M1_S19	N	05/30/2019	Ground Water	148	158
Demolition Area 1	MW-353M2	MW-353M2_S19	N	05/30/2019	Ground Water	57	67
Demolition Area 1	MW-353M1	MW-353M1_S19	N	05/30/2019	Ground Water	107	117
Demolition Area 1	MW-352M1	MW-352M1_S19	N	05/29/2019	Ground Water	115	125
J3 Range	LKSNK0006	LKSNK0006_S19	N	05/29/2019	Surface Water	0	1
J3 Range	LKSNK0007	LKSNK0007_S19	N	05/29/2019	Surface Water	0	4
J3 Range	LKSNK0005	LKSNK0005_S19	N	05/29/2019	Surface Water	0	4
Demolition Area 1	MW-274	MW-274_S19	N	05/28/2019	Ground Water	109	199
Demolition Area 1	MW-73S	MW-73S_S19	N	05/28/2019	Ground Water	52.2	61.7
Demolition Area 1	MW-73S	MW-73S_S19D	FD	05/28/2019	Ground Water	52.2	61.7
Demolition Area 1	XX9514	XX9514_S19	N	05/28/2019	Ground Water	102	112
Demolition Area 1	XX9514	XX9514_S19D	FD	05/28/2019	Ground Water	102	112
Demolition Area 1	MW-543M2	MW-543M2_S19	N	05/23/2019	Ground Water	91.8	101.8
Demolition Area 1	MW-543M1	MW-543M1_S19	N	05/23/2019	Ground Water	127	137
Demolition Area 1	MW-544M3	MW-544M3_S19	N	05/23/2019	Ground Water	77.5	87.5
Demolition Area 1	MW-544M2	MW-544M2_S19	N	05/23/2019	Ground Water	112	122
Demolition Area 1	MW-544M1	MW-544M1_S19	N	05/23/2019	Ground Water	162	172
Demolition Area 1	MW-544M1	MW-544M1_S19D	FD	05/23/2019	Ground Water	162	172
Demolition Area 1	MW-546M2	MW-546M2_S19	N	05/22/2019	Ground Water	100	110
Demolition Area 1	MW-546M1	MW-546M1_S19	N	05/22/2019	Ground Water	140	150
Demolition Area 1	MW-545M4	MW-545M4_S19	N	05/22/2019	Ground Water	72	82
Demolition Area 1	MW-545M3	MW-545M3_S19	N	05/22/2019	Ground Water	101.5	111.5
Demolition Area 1	MW-545M2	MW-545M2_S19	N	05/22/2019	Ground Water	142	152
Demolition Area 1	MW-545M2	MW-545M2_S19D	FD	05/22/2019	Ground Water	142	152
Demolition Area 1	MW-545M1	MW-545M1_S19	N	05/22/2019	Ground Water	162	172
Demolition Area 1	MW-662D	MW-662D_S19	N	05/21/2019	Ground Water	202.3	212.3
Demolition Area 1	MW-662D	MW-662D_S19	N	05/21/2019	Ground Water	203.3	212.3
Demolition Area 1	MW-225M3	MW-225M3_S19	N	05/21/2019	Ground Water	125	135
Demolition Area 1	MW-225M2	MW-225M2_S19	N	05/21/2019	Ground Water	145	155
Demolition Area 1	MW-225M1	MW-225M1_S19	N	05/21/2019	Ground Water	175	185
Demolition Area 1	MW-433	MW-433_S19	N	05/21/2019	Ground Water	148	228
Demolition Area 1	MW-240M2	MW-240M2_S19	N	05/20/2019	Ground Water	125	135
Demolition Area 1	MW-240M1	MW-240M1_S19	N	05/20/2019	Ground Water	198	208
Demolition Area 1	MW-664M2	MW-664M2_S19	N	05/20/2019	Ground Water	218.5	228.5
Demolition Area 1	MW-664M1	MW-664M1_S19	N	05/20/2019	Ground Water	248.5	258.5
Demolition Area 1	MW-211M2	MW-211M2_S19	N	05/20/2019	Ground Water	175	185
Demolition Area 1	MW-211M1	MW-211M1_S19	N	05/20/2019	Ground Water	200	210
Demolition Area 1	MW-139M2	MW-139M2_S19	N	05/17/2019	Ground Water	154	164
Demolition Area 1	MW-661D	MW-661D_S19	N	05/17/2019	Ground Water	251.6	261.6
Demolition Area 1	MW-221M1	MW-221M1_S19	N	05/17/2019	Ground Water	221	231
Demolition Area 1	MW-341M3	MW-341M3_S19	N	05/17/2019	Ground Water	209.5	219.5
Demolition Area 1	MW-341M2	MW-341M2_S19	N	05/17/2019	Ground Water	264.5	269.5
Demolition Area 1	MW-341M2	MW-341M2_S19D	FD	05/17/2019	Ground Water	264.5	269.5
Demolition Area 1	MW-341M1	MW-341M1_S19	N	05/17/2019	Ground Water	289.5	299.5
Demolition Area 1	MW-210M2	MW-210M2_S19	N	05/16/2019	Ground Water	156	166
Demolition Area 1	MW-210M1	MW-210M1_S19	N	05/16/2019	Ground Water	201	211
Demolition Area 1	MW-114M2	MW-114M2_S19	N	05/16/2019	Ground Water	120	130
Demolition Area 1	MW-114M1	MW-114M1_S19	N	05/16/2019	Ground Water	177	187
Demolition Area 1	MW-165M2	MW-165M2_S19	N	05/16/2019	Ground Water	124.5	134.5
Demolition Area 1	MW-165M2	MW-165M2_S19D	FD	05/16/2019	Ground Water	124.5	134.5
Demolition Area 1	MW-165M1	MW-165M1_S19	N	05/16/2019	Ground Water	184.5	194.5
Demolition Area 1	MW-129M3	MW-129M3_S19	N	05/15/2019	Ground Water	96	106
Demolition Area 1	MW-129M2	MW-129M2_S19	N	05/15/2019	Ground Water	116	126
Demolition Area 1	MW-129M1	MW-129M1_S19	N	05/15/2019	Ground Water	136	146
Demolition Area 1	MW-78M2	MW-78M2_S19	N	05/15/2019	Ground Water	115	125
Demolition Area 1	MW-78M1	MW-78M1_S19	N	05/15/2019	Ground Water	135	145

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 May to 31 May 2019

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 1	MW-648M1	MW-648M1_S19	N	05/14/2019	Ground Water	112	122
Demolition Area 1	MW-75M2	MW-75M2_S19	N	05/14/2019	Ground Water	115	125
Demolition Area 1	MW-75M1	MW-75M1_S19	N	05/14/2019	Ground Water	140	150
Demolition Area 1	MW-31S	MW-31S_S19	N	05/14/2019	Ground Water	98	103
Demolition Area 1	MW-31S	MW-31S_S19D	FD	05/14/2019	Ground Water	98	103
Demolition Area 1	MW-31M	MW-31M_S19	N	05/14/2019	Ground Water	113	123
Demolition Area 1	MW-31D	MW-31D_S19	N	05/14/2019	Ground Water	133	138
Demolition Area 1	MW-76S	MW-76S_S19	N	05/13/2019	Ground Water	85	95
Demolition Area 1	MW-76M2	MW-76M2_S19	N	05/13/2019	Ground Water	105	115
Demolition Area 1	MW-76M1	MW-76M1_S19	N	05/13/2019	Ground Water	125	135
Demolition Area 1	MW-77S	MW-77S_S19	N	05/13/2019	Ground Water	83	93
Demolition Area 1	MW-77M2	MW-77M2_S19	N	05/13/2019	Ground Water	120	130
Demolition Area 1	MW-77M2	MW-77M2_S19D	FD	05/13/2019	Ground Water	120	130
Demolition Area 1	MW-77M1	MW-77M1_S19	N	05/13/2019	Ground Water	180	190
D Range	SSDR158EAST	DR158E_L7R2	FR	05/09/2019	Soil	5	5.25
D Range	SSDR158EAST	DR158E_L7R1	FR	05/09/2019	Soil	5	5.25
D Range	SSDR158EAST	DR158E_L7	N	05/09/2019	Soil	5	5.25
Former B Range	FBR140QR	FBR140QR_L11R2	FR	05/09/2019	Soil	10.5	10.75
Former B Range	FBR140QR	FBR140QR_L11R1	FR	05/09/2019	Soil	10.5	10.75
Former B Range	FBR140QR	FBR140QR_L11	N	05/09/2019	Soil	10.5	10.75
Demolition Area 1	PR-EFF	PR-EFF-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-158A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1LE-EFF	D1LE-EFF-34A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1LE-MID2	D1LE-MID2-34A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1LE-MID1	D1LE-MID1-34A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1LE-INF	D1LE-INF-34A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1-EFF	D1-EFF-106A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1-MID-2	D1-MID-2-106A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1-MID-1	D1-MID-1-106A	N	05/07/2019	Process Water	0	0
Demolition Area 1	D1-INF	D1-INF-106A	N	05/07/2019	Process Water	0	0
Demolition Area 2	MW-161S	MW-161S_S19	N	05/06/2019	Ground Water	145.5	155.5
Demolition Area 2	MW-161S	MW-161S_S19D	FD	05/06/2019	Ground Water	145.5	155.5
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-128A	N	05/06/2019	Process Water	0	0
Demolition Area 2	MW-160S	MW-160S_S19	N	05/06/2019	Ground Water	137.5	147.5
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-128A	N	05/06/2019	Process Water	0	0
Demolition Area 2	MW-573M2	MW-573M2_S19	N	05/06/2019	Ground Water	155.4	165.4
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-128A	N	05/06/2019	Process Water	0	0
Demolition Area 2	MW-573M1	MW-573M1_S19	N	05/06/2019	Ground Water	176.4	186.4
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-128A	N	05/06/2019	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-128A	N	05/06/2019	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-152A	N	05/02/2019	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-152A	N	05/02/2019	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-152A	N	05/02/2019	Process Water	0	0
J3 Range	J3-INF	J3-INF-152A	N	05/02/2019	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 May to 31 May 2019

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
Demolition Area 2	MW-572M1	MW-572M1_S19	N	05/02/2019	Ground Water	164.9	174.9
J1 Range Southern	J1S-EFF	J1S-EFF-138A	N	05/02/2019	Process Water	0	0
J1 Range Southern	J1S-MID	J1S-MID-138A	N	05/02/2019	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-138A	N	05/02/2019	Process Water	0	0
Demolition Area 2	MW-259M1	MW-259M1_S19	N	05/02/2019	Ground Water	189	199
Central Impact Area	CIA2-EFF	CIA2-EFF-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-64A	N	05/02/2019	Process Water	0	0
Demolition Area 2	MW-262M1	MW-262M1_S19	N	05/02/2019	Ground Water	226	236
Central Impact Area	CIA2-MID1	CIA2-MID1-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA1-EFF	CIA1-EFF-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA1-MID1	CIA1-MID1-64A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-64A	N	05/02/2019	Process Water	0	0
Demolition Area 2	MW-16S	MW-16S_S19	N	05/02/2019	Ground Water	125	135
Central Impact Area	CIA3-EFF	CIA3-EFF-35A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA3-MID2	CIA3-MID2-35A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA3-MID1	CIA3-MID1-35A	N	05/02/2019	Process Water	0	0
Central Impact Area	CIA3-INF	CIA3-INF-35A	N	05/02/2019	Process Water	0	0
Demolition Area 2	MW-311M2	MW-311M2_S19	N	05/01/2019	Ground Water	200	210
Demolition Area 2	MW-311M1	MW-311M1_S19	N	05/01/2019	Ground Water	222	232
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-152A	N	05/01/2019	Process Water	0	0
Demolition Area 2	MW-435M2	MW-435M2_S19	N	05/01/2019	Ground Water	149.57	159.93
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-152A	N	05/01/2019	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-152A	N	05/01/2019	Process Water	0	0
Demolition Area 2	MW-435M1	MW-435M1_S19	N	05/01/2019	Ground Water	169.94	179.95
J1 Range Northern	J1N-EFF	J1N-EFF-67A	N	05/01/2019	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-67A	N	05/01/2019	Process Water	0	0
J1 Range Northern	J1N-MID1	J1N-MID1-67A	N	05/01/2019	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-67A	N	05/01/2019	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received May 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
J1 Range Northern	MW-689M2	MW-689M2_S19	231.4	241.4	04/23/2019	SW6850	Perchlorate	0.57	J	ug/L	2.0		0.027	0.20
J1 Range Northern	MW-689M1	MW-689M1_S19	253.5	263.5	04/23/2019	SW6850	Perchlorate	0.13	J	ug/L	2.0		0.027	0.20
J1 Range Northern	MW-584M1	MW-584M1_S19	248	258	04/22/2019	SW6850	Perchlorate	1.8	J	ug/L	2.0		0.027	0.20
J1 Range Northern	MW-401M3	MW-401M3_S19	228.5	238.5	04/22/2019	SW6850	Perchlorate	0.097	J	ug/L	2.0		0.027	0.20
J1 Range Northern	MW-606M2	MW-606M2_S19	193.2	203.2	04/22/2019	SW6850	Perchlorate	0.068	J	ug/L	2.0		0.027	0.20
J1 Range Northern	MW-606M1	MW-606M1_S19	233.3	243.3	04/22/2019	SW6850	Perchlorate	0.81	J	ug/L	2.0		0.027	0.20
J1 Range Southern	MW-669M2	MW-669M2_S19	201.7	211.7	04/16/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.51		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-669M1	MW-669M1_S19	223.7	233.7	04/16/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.47	J	ug/L	0.60		0.036	0.20
J1 Range Southern	MW-524M1	MW-524M1_S19	148	158	04/11/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.039	J	ug/L	400		0.025	0.20
J1 Range Southern	MW-524M1	MW-524M1_S19	148	158	04/11/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.52		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-524M1	MW-524M1_S19D	148	158	04/11/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.040	J	ug/L	400		0.025	0.20
J1 Range Southern	MW-524M1	MW-524M1_S19D	148	158	04/11/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.53		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-647M1	MW-647M1_S19	211.3	221.3	04/10/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.68		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-647M1	MW-647M1_S19D	211.3	221.3	04/10/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.63		ug/L	0.60	X	0.036	0.20
J1 Range Southern	MW-402M1	MW-402M1_S19	190.14	200.13	04/10/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.20		ug/L	0.60		0.036	0.20
J1 Range Southern	MW-400M1	MW-400M1_S19	192.76	202.75	04/10/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.19	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-614M2	MW-614M2_S19	215	225	04/09/2019	SW6850	Perchlorate	0.11	J	ug/L	2.0		0.027	0.20
Central Impact Area	MW-614M1	MW-614M1_S19	275	285	04/09/2019	SW6850	Perchlorate	0.068	J	ug/L	2.0		0.027	0.20
Central Impact Area	MW-614M1	MW-614M1_S19	275	285	04/09/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22		ug/L	0.60		0.036	0.20
Northwest Corner	MW-279S	MW-279S_S19	66	76	04/08/2019	SW6850	Perchlorate	0.11		ug/L	2.0		0.027	0.20
Northwest Corner	MW-279M2	MW-279M2_S19	83	88	04/08/2019	SW6850	Perchlorate	0.43		ug/L	2.0		0.027	0.20
Northwest Corner	MW-278S	MW-278S_S19	80	90	04/08/2019	SW6850	Perchlorate	0.36		ug/L	2.0		0.027	0.20
Northwest Corner	MW-278M2	MW-278M2_S19	97	102	04/08/2019	SW6850	Perchlorate	0.26		ug/L	2.0		0.027	0.20
Central Impact Area	MW-344M2	MW-344M2_S19	145	155	04/04/2019	SW6850	Perchlorate	0.66		ug/L	2.0		0.027	0.20
Central Impact Area	MW-344M2	MW-344M2_S19D	145	155	04/04/2019	SW6850	Perchlorate	0.56		ug/L	2.0		0.027	0.20
Central Impact Area	MW-623M3	MW-623M3_S19	275	285	04/03/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.17	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-623M3	MW-623M3_S19	275	285	04/03/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.19	J	ug/L	400		0.025	0.20
Central Impact Area	MW-623M2	MW-623M2_S19	291.8	301.8	04/03/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.14	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-623M1	MW-623M1_S19	340	350	04/03/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.069	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-284M2	MW-284M2_S19	45	55	04/02/2019	SW6850	Perchlorate	0.28		ug/L	2.0		0.027	0.20
Central Impact Area	MW-284M1	MW-284M1_S19	115	125	04/02/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.12	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-284M1	MW-284M1_S19	115	125	04/02/2019	SW6850	Perchlorate	0.093	J	ug/L	2.0		0.027	0.20
Northwest Corner	MW-270M1	MW-270M1_S19	74	79	04/02/2019	SW6850	Perchlorate	0.21		ug/L	2.0		0.027	0.20
Central Impact Area	MW-270D	MW-270D_S19	132	137	04/02/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.15	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-625M1	MW-625M1_S19	260	270	04/01/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.40		ug/L	0.60		0.036	0.20
Central Impact Area	MW-616M1	MW-616M1_S19	217.1	227.1	04/01/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.29		ug/L	0.60		0.036	0.20
Central Impact Area	MW-617M1	MW-617M1_S19	175.8	185.8	03/28/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.3		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-644M1	MW-644M1_S19	275.9	285.9	03/28/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.83		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-626M2	MW-626M2_S19	237.2	247.2	03/28/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.064	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-626M1	MW-626M1_S19	282.2	292.2	03/28/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.5		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-441M2	MW-441M2_S19	109.5	119.5	03/27/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.096	J	ug/L	400		0.025	0.20
Central Impact Area	MW-441M1	MW-441M1_S19	204.6	214.6	03/27/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.27		ug/L	0.60		0.036	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received May 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
Central Impact Area	MW-628M1	MW-628M1_S19	230.8	240.8	03/27/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.34		ug/L	0.60		0.036	0.20
Central Impact Area	MW-608M2	MW-608M2_S19	253.4	263.4	03/26/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.9		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-608M2	MW-608M2_S19	253.4	263.4	03/26/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.14	J	ug/L	400		0.025	0.20
Central Impact Area	MW-608M2	MW-608M2_S19D	253.4	263.4	03/26/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.13	J	ug/L	400		0.025	0.20
Central Impact Area	MW-608M2	MW-608M2_S19D	253.4	263.4	03/26/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.8	J	ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-608M1	MW-608M1_S19	267.4	277.4	03/26/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.7		ug/L	0.60	X	0.036	0.20
Central Impact Area	MW-608M1	MW-608M1_S19	267.4	277.4	03/26/2019	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.18	J	ug/L	400		0.025	0.20
Central Impact Area	MW-323M2	MW-323M2_S19	120	130	03/25/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.064	J	ug/L	0.60		0.036	0.20
Central Impact Area	MW-323M1	MW-323M1_S19	195	205	03/25/2019	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.31		ug/L	0.60		0.036	0.20

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

MCL/HA= Either the MCL or Lowest Health Advisory Limit