MONTHLY PROGRESS REPORT #233
FOR AUGUST 2016

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 August to 31 August 2016.

1. SUMMARY OF REMEDIATION ACTIONS

The following is a description of Remediation Actions (RA) underway at Camp Edwards as of August 2016. Remediation Actions may include Rapid Response Actions (RRA). An RRA is an interim action that may be conducted prior to risk assessments or remedial investigations to address a known, ongoing threat of contamination to groundwater and/or soil.

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 Leading Edge include extraction wells, ex-situ treatment processes to remove explosives compounds and perchlorate from the groundwater, and injection wells or infiltration field 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 325 gpm, with over 2.401 billion gallons of water treated and re-injected as of 26 August 2016. No Frank Perkins Road facility shut down occurred in August.

The Pew Road Mobile Treatment Unit (MTU) continues to operate at a flow rate of 105 gpm with over 481.2 million gallons of water treated and re-injected as of 26 August 2016. The following Pew Road MTU shut downs occurred in August:

- Shut down on 6 August 2016 at 1902 due to a power interruption and was restarted on 8 August 2016 at 0725; and
- Shut down on 30 August 2016 at 1120 for system telemetry upgrades and was restarted on 30 August 2016 at 1203.

The Base Boundary RA was shut down on 3 April 2016 and is offline awaiting extraction well motor replacement, with over 147.6 million gallons of water treated and re-injected as of 26 August 2016.

The Leading Edge system is on-line and operating at a flow rate of 100 gpm with over 7.18 million gallons of water treated and re-injected as of 26 August 2016. No system shut downs occurred in August.

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 26 August 2016, over 357 million gallons of water have been treated and re-injected. No J-1 Range Southern system shut downs occurred in August.

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 will continue to operate at a total system flow rate of 250 gpm. As of 26 August 2016, over 326 million gallons of water have been treated and re-injected. No J-1 Range Northern MTU shut downs occurred in August.

J-3 Range Groundwater RRA

The J-3 Range Groundwater RRA 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 continues to operate at a flow rate of 255 gpm. As of 26 August 2016, over 932,3 million gallons of water have been treated and re-injected. The following J-3 Range system shut downs occurred in August:

- 90EW0001 and EWIP1 were shut down on 6 August 2016 at 1815 due to a power interruption. 90EW0001 was restarted on 8 August 2016 at 1005 and EWIP1 was restarted on 8 August 2016 at 0908;
- Shut down on 11 August 2016 at 1503 due to FS-12 being off and restarted on 12 August 2016 at 0836; and
- EWIP1 was shut down on 27 August 2016 at 0901 due to a system alarm and restarted on 29 August at 1051.

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 26 August 2016, over 787.5 million gallons of water have been treated and re-injected. The following J-2 Range Northern Treatment Building shut downs occurred in August:

- Shut down on 6 August 2016 at 1815 due to a power interruption and was restarted at 8 August at 0742; and
- Shut down on 14 August 2016 at 0714 due to a power interruption and was restarted on 15 August 2016 at 0917.

The Northern MTUs E and F continue to operate at a flow rate of 250 gpm. As of 26 August 2016, over 1.265 billion gallons of water have been treated and re-injected. The following J-2 Range Northern MTU shut downs occurred in August:

- MTUs E and F were shut down on 6 August 2016 at 1813 due to a power interruption and were restarted at 8 August 2016 at 0800;
- MTUs E and F were shut down on 14 August 2016 at 2113 and 2107, respectively, due to a system alarm and were restarted on 15 August 2016 at 0740, and 0736, respectively; and
- MTUs E and F were shut down on 31 August 2016 at 1315 for media change-out and were restarted on 1 September 2016 at 0800.

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 26 August 2016, over 866.5 million gallons of water have been treated and re-injected. No shut downs of MTUs H and I occurred in August.

MTU J continues to operate at a flow rate of 120 gpm. As of 26 August 2016, over 388 million gallons of water have been treated and re-injected. The following shut down of MTU J occurred in August:

- MTUs J was shut down on 6 August 2016 at 1815 due to a power interruption and was restarted on 8 August 2016 at 1030.

MTU K continues to operate at a flow rate of 125 gpm. As of 26 August 2016, over 493 million gallons of water have been treated and re-injected. No MTU K shut downs occurred in August.

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 26 August 2016, over 684 million gallons of water have been treated and re-injected. No CIA treatment facility shut downs occurred in August.

SUMMARY OF ACTIONS TAKEN

Samples collected during the reporting period are summarized in Table 1.

Process water samples were collected at Frank Perkins Road, Pew Road, J-1 Range Southern, J-1 Range Northern, J-2 Range Northern, J-2 Range Eastern, J-3 Range, and Central Impact Area (CIA).

Environmental and system performance monitoring groundwater samples were collected at Demolition Area 1, Demolition Area 2, J-1 Range Northern, J-2 Range Northern, J-3 Range, and L Range.

Collected soil samples at B Range, C Range, D Range, Former C Range, Former D Range, and CIA.

Drilled and collected groundwater profile samples at Demolition Area 1 (BH-664) and J-2 Range Eastern (BH-665 and BH-666).

Completed soil excavation (2nd lift) and stockpiling at Former C Range.

Completed soil excavation and stockpiling at D Range (2nd lift) and Former D Range (3rd lift).

Completed off-site Transportation and Disposal (T&D) of excavated soil from C Range (2nd lift), Former N Range (1st lift), U Range (1st lift), and J-2 Range (1st lift).

Continued MEC investigation in Barrage Rocket Area and began MEC investigations in Hillside Area at J-3 Range.

Continued intrusive investigation of anomalies and Metalmapper collection of cued data in Phase II area 2 at the CIA.

Performed daily inspection of BEM cover at the CIA to ensure cover is secure and intact.

Performed demolition operations at the CIA.

Installed gate at CIA groundwater treatment system 3.

Continued start-up testing for extraction well J3IP2 in the J-3 Range.

JBCC IAGWSP Tech Update Meeting Minutes 11 August 2016

Project and Field Work Update

Crews are continuing to work at the J-3 Range Barrage Area and have competed about half of the ten acres. There are no new MEC items to report since the last tech meeting. Work will be completed on the barrage area in approximately three weeks then the crew will move to the Hillside and then to the Burn-Kettle Conex area.

Soil from the J-2 Range and U Range is going off-site to the Bourne Landfill on Monday. EPA requested the waste characterization results.

CIA field crews continue to work in Phase II Area 2. Dawson is working in the 100% QA grid 42-48 and metal mapper operations are ongoing in grid 42-47. At the completion of the fieldwork this year, IAGWSP will present a review of what has been done, what has been found and next steps.

At the Small Arms Ranges, crews finished excavating the third lift at one grid at B Range, second lifts at one grid at Former C Range and third lifts at three grids at Former D Range. The second lift was completed at Former C range and results from the post-excavation sampling have not been received yet. The crews completed at N Range, Former N Range and M2 Range and post excavation sampling results show no additional lifts are needed. First lifts were completed at Former B and D Range, and additional lifts will be required.

There was a waste characterization issue with the soil from the Current D Range. Three of the 11 samples had TCLP exceedances for lead. Disposal options are being reviewed.

The drill rig is installing screens at MW-664 at Demolition Area 1. The first J-2 East location is completed. Results should be in early next week and a screen setting call will be set up mid-week. Once the screens are installed at MW-664, the rig will move to the second J-2 East location.

All treatment systems are up and running with the exception of Demolition Area 1 base boundary system. IAGWSP is still waiting to hear back from Eversource on the cost to de-energize the power lines in order to make system repairs. The first influent results from the new J-3 in plume extraction well showed 42.5 ppb perchlorate.

Action Items

The action items were discussed and updated.

JBCC Cleanup Team Meeting

The JBCC Cleanup Team (JBCCCT), formerly the MMR Cleanup Team (MMRCT) was most recently scheduled to meet on May 11, 2016; this meeting was canceled, and the next meeting date has not yet been determined. 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 2 summarizes the validated detections of explosives compounds and perchlorate for all groundwater results received from 1 August to 31 August 2016. 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.

There are currently twelve operable units (OU) 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. 232 for July 2016 08/10/2016
- Draft J-3 Range Environmental Monitoring Work Plan 08/02/2016
- Final Central Impact Area Environmental Monitoring Work Plan 08/09/2016
- Changes to L Range Chemical Monitoring Well Network – Project Note 08/22/2016

3. SCHEDULED ACTIONS

The following documents are being prepared or revised during September 2016:

- Training Areas Draft Investigation Report;
- Training Areas Draft Remedy Selection Plan;
- Draft BIP Report;
- L Range 2016 Environmental Monitoring Report;
- J-3 Range Environmental Monitoring Work Plan;
- J-1 Range Northern and J-1 Range Southern 2016 Environmental Monitoring Report;
- Small Arms Ranges 2016 Annual Interim Environmental Monitoring Report;
- Demolition Area 1 2016 Annual Environmental Monitoring Report;
- Northwest Corner 2016 Environmental Monitoring Report; and
- Central Impact Area Annual 2016 Environmental Monitoring Report.

TABLE 1
Sampling Progress: 1 August to 31 August 2016

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
J2 Range Northern	J2EW3-MW1-B	J2EW3-MW1-B_F16	N	08/31/2016	Ground Water	210.7	220.7
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F16	N	08/31/2016	Ground Water	245.7	255.7
J2 Range Northern	J2EW3-MW1-C	J2EW3-MW1-C_F16D	FD	08/31/2016	Ground Water	245.7	255.7
J2 Range Northern	J2EW3-MW-2-B	J2EW3-MW-2-B_F16	N	08/31/2016	Ground Water	216.2	226.2
J2 Range Northern	J2EW3-MW-2-C	J2EW3-MW-2-C_F16	N	08/31/2016	Ground Water	251.1	261.1
J2 Range Northern	MW-296M2	MW-296M2_F16	N	08/30/2016	Ground Water	215	225
J2 Range Northern	MW-296M1	MW-296M1_F16	N	08/30/2016	Ground Water	255.1	265.1
J2 Range Northern	MW-130S	MW-130S_F16	N	08/30/2016	Ground Water	103	113
J2 Range Northern	MW-230M1	MW-230M1_F16	N	08/30/2016	Ground Water	130	140
J2 Range Northern	MW-234M2	MW-234M2_F16	N	08/30/2016	Ground Water	110	120
J2 Range Northern	MW-234M2	MW-234M2_F16D	FD	08/30/2016	Ground Water	110	120
J2 Range Northern	MW-234M1	MW-234M1_F16	N	08/30/2016	Ground Water	130	140
J2 Range Northern	MW-630M1	MW-630M1_F16	N	08/29/2016	Ground Water	217	227
J2 Range Northern	MW-632M2	MW-632M2_F16	N	08/29/2016	Ground Water	229.5	239.5
J2 Range Northern	MW-632M1	MW-632M1_F16	N	08/29/2016	Ground Water	254.5	264.5
J2 Range Northern	MW-318M2	MW-318M2_F16	N	08/29/2016	Ground Water	205.8	215.8
J2 Range Northern	MW-318M1	MW-318M1_F16	N	08/29/2016	Ground Water	305.8	315.8
J2 Range Northern	MW-305M1	MW-305M1_F16	N	08/29/2016	Ground Water	202.8	212.8
J2 Range Northern	MW-322M1	MW-322M1_F16	N	08/29/2016	Ground Water	245.8	255.8
Central Impact Area	SSCIAMM856	DA071216CIA02_30A	N	08/25/2016	Soil	0	0.25
Former D Range	SSD-1AA	D-1AA_A	N	08/25/2016	Soil	0	0.25
Former D Range	SSFDR06A	FDR06A_A	N	08/25/2016	Soil	0	0.25
Former D Range	SSFDR135UA	FDR135UA_C	FR	08/25/2016	Soil	0	0.25
Former D Range	SSFDR135UA	FDR135UA_B	FR	08/25/2016	Soil	0	0.25
Former D Range	SSFDR135UA	FDR135UA_A	N	08/25/2016	Soil	0	0.25
D Range	SSDR01A	DR01A_C	FR	08/25/2016	Soil	0	0.25
D Range	SSDR01A	DR01A_B	FR	08/25/2016	Soil	0	0.25
D Range	SSDR01A	DR01A_A	N	08/25/2016	Soil	0	0.25
J2 Range Northern	MW-330M2	MW-330M2_F16	N	08/24/2016	Ground Water	238	248
J2 Range Northern	MW-63M2	MW-63M2_F16	N	08/24/2016	Ground Water	214	224
Central Impact Area	SSCIAMM797	DA060916CIA02_30A	N	08/24/2016	Soil	0	0.25
J2 Range Northern	MW-63M1	MW-63M1_F16	N	08/24/2016	Ground Water	244	254
J2 Range Northern	MW-340M2	MW-340M2_F16	N	08/24/2016	Ground Water	215.8	225.1
J2 Range Northern	MW-340M1	MW-340M1_F16	N	08/24/2016	Ground Water	255.9	265.9
J2 Range Northern	MW-345M2	MW-345M2_F16	N	08/23/2016	Ground Water	236.6	246.6
J2 Range Northern	MW-612M2	MW-612M2_F16	N	08/23/2016	Ground Water	267	277
J2 Range Northern	MW-612M1	MW-612M1_F16	N	08/23/2016	Ground Water	297	307
Demolition Area 2	MW-655M2	MW-655M2_R2	N	08/23/2016	Ground Water	156	166
Demolition Area 2	MW-655M1	MW-655M1_R2	N	08/23/2016	Ground Water	178	188
Demolition Area 2	MW-654M1	MW-654M1_R2	N	08/23/2016	Ground Water	154	164
J3 Range	MW-653M2	MW-653M2_R2	N	08/23/2016	Ground Water	59.3	69.3
J3 Range	MW-653M2	MW-653M2_R2D	FD	08/23/2016	Ground Water	59.3	69.3
J3 Range	MW-653M1	MW-653M1_R2	N	08/22/2016	Ground Water	147.5	157.5
J3 Range	MW-653M1	MW-653M1_R2D	FD	08/22/2016	Ground Water	147.5	157.5
J1 Range Northern	MW-657M2	MW-657M2_R2	N	08/22/2016	Ground Water	208.3	218.3
J1 Range Northern	MW-657M1	MW-657M1_R2	N	08/22/2016	Ground Water	240.3	250.3
J1 Range Northern	MW-656M2	MW-656M2_R2	N	08/22/2016	Ground Water	222.1	232.1
J1 Range Northern	MW-656M1	MW-656M1_R2	N	08/22/2016	Ground Water	244.1	254.1
J2 Range Northern	MW-635M1	MW-635M1_F16	N	08/18/2016	Ground Water	265.4	275.4
J2 Range Eastern	BH-666	J2EP-5_266-271	N	08/18/2016	GW Profile	266	271
J2 Range Eastern	BH-666	J2EP-5_256-261	N	08/18/2016	GW Profile	256	261
L Range	MW-651M1	MW-651M1_R2	N	08/17/2016	Ground Water	242.3	252.3
L Range	MW-650M1	MW-650M1_R2	N	08/17/2016	Ground Water	260	270
J2 Range Eastern	BH-666	J2EP-5_246-251	N	08/17/2016	GW Profile	246	251
Demolition Area 1	MW-432	MW-432_T16	N	08/17/2016	Ground Water	88	188
J2 Range Eastern	BH-666	J2EP-5_236-241	N	08/17/2016	GW Profile	236	241
Demolition Area 1	MW-431	MW-431_T16	N	08/17/2016	Ground Water	88	188

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 August to 31 August 2016

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	BH-666	J2EP-5_231-236	N	08/17/2016	GW Profile	231	236
Demolition Area 1	MW-258M1	MW-258M1_T16	N	08/17/2016	Ground Water	109	119
Demolition Area 1	MW-542M1	MW-542M1_T16	N	08/17/2016	Ground Water	144	154
Demolition Area 1	MW-532M2	MW-532M2_T16	N	08/17/2016	Ground Water	138	148
Demolition Area 1	MW-532M2	MW-532M2_T16D	FD	08/17/2016	Ground Water	138	148
J2 Range Eastern	BH-666	J2EP-5_216-221	N	08/16/2016	GW Profile	216	221
Demolition Area 1	MW-225M1	MW-225M1_T16	N	08/16/2016	Ground Water	175	185
J2 Range Eastern	BH-666	J2EP-5_206-211	N	08/16/2016	GW Profile	206	211
Demolition Area 1	MW-341M2	MW-341M2_T16	N	08/16/2016	Ground Water	264.5	269.5
J2 Range Eastern	BH-666	J2EP-5_196-201	N	08/16/2016	GW Profile	196	201
J2 Range Eastern	BH-666	J2EP-5_196-201D	FD	08/16/2016	GW Profile	196	201
J3 Range	MW-247M3	MW-247M3_F16	N	08/16/2016	Ground Water	95	105
J2 Range Eastern	BH-666	J2EP-5_186-191	N	08/16/2016	GW Profile	186	191
J3 Range	MW-247M2	MW-247M2_F16	N	08/16/2016	Ground Water	125	135
J2 Range Eastern	BH-666	J2EP-5_176-181	N	08/16/2016	GW Profile	176	181
J3 Range	MW-247M1	MW-247M1_F16	N	08/16/2016	Ground Water	180	190
J2 Range Eastern	BH-666	J2EP-5_166-171	N	08/16/2016	GW Profile	166	171
J3 Range	90MW0054	90MW0054_F16	N	08/16/2016	Ground Water	107	112
J3 Range	90MW0054	90MW0054_F16D	FD	08/16/2016	Ground Water	107	112
J3 Range	J3EWIP1	J3EWIP1_F16	N	08/15/2016	Ground Water	153	193
J3 Range	J3EWIP1	J3EWIP1_F16D	FD	08/15/2016	Ground Water	153	193
J3 Range	MW-250M3	MW-250M3_F16	N	08/15/2016	Ground Water	95	105
J3 Range	MW-250M3	MW-250M3_F16D	FD	08/15/2016	Ground Water	95	105
J3 Range	MW-250M2	MW-250M2_F16	N	08/15/2016	Ground Water	145	155
J3 Range	MW-250M1	MW-250M1_F16	N	08/15/2016	Ground Water	185	195
J3 Range	J3EW0032	J3EW0032_F16	N	08/15/2016	Ground Water	102	152
J3 Range	90EW0001	90EW0001_F16	N	08/15/2016	Ground Water	83.1	143.8
J3 Range	SP3-91M	SP3-91M_F16	N	08/15/2016	Ground Water	50	70
J3 Range	RS0011OSNK	RS0011OSNK_F16	N	08/11/2016	Ground Water	0	0
J3 Range	MW-171M2	MW-171M2_F16	N	08/11/2016	Ground Water	81	86
J3 Range	90MW0104C	90MW0104C_F16	N	08/10/2016	Ground Water	84.8	89.8
J3 Range	90MW0104B	90MW0104B_F16	N	08/10/2016	Ground Water	115	120
J2 Range Eastern	BH-665	J2EP-4_266-271	N	08/10/2016	GW Profile	266	271
J2 Range Eastern	BH-665	J2EP-4_256-261	N	08/10/2016	GW Profile	256	261
J3 Range	J3-MW-1-A	J3-MW-1-A_F16	N	08/10/2016	Ground Water	128.6	138.6
J3 Range	J3-MW-1-B	J3-MW-1-B_F16	N	08/10/2016	Ground Water	175.6	185.6
J2 Range Eastern	BH-665	J2EP-4_246-251	N	08/10/2016	GW Profile	246	251
J3 Range	J3-MW-1-C	J3-MW-1-C_F16	N	08/10/2016	Ground Water	203.6	213.6
J2 Range Eastern	BH-665	J2EP-4_236-241	N	08/09/2016	GW Profile	236	241
J3 Range	MW-197M3	MW-197M3_F16	N	08/09/2016	Ground Water	60.2	65.2
J3 Range	MW-197M3	MW-197M3_F16D	FD	08/09/2016	Ground Water	60.2	65.2
J2 Range Eastern	BH-665	J2EP-4_226-231	N	08/09/2016	GW Profile	226	231
J3 Range	MW-197M2	MW-197M2_F16	N	08/09/2016	Ground Water	80.2	85.2
J2 Range Eastern	BH-665	J2EP-4_216-221	N	08/09/2016	GW Profile	216	221
J3 Range	MW-637M3	MW-637M3_F16	N	08/09/2016	Ground Water	174.1	184.1
J3 Range	MW-637M2	MW-637M2_F16	N	08/09/2016	Ground Water	214.1	224.1
J3 Range	MW-637M2	MW-637M2_F16D	FD	08/09/2016	Ground Water	214.1	224.1
J2 Range Eastern	BH-665	J2EP-4_206-211	N	08/09/2016	GW Profile	206	211
J2 Range Eastern	BH-665	J2EP-4_206-211D	FD	08/09/2016	GW Profile	206	211
J3 Range	MW-637M1	MW-637M1_F16	N	08/09/2016	Ground Water	236.1	246.1
J3 Range	90PZ0211	90PZ0211_F16	N	08/08/2016	Ground Water	80	110
J2 Range Eastern	BH-665	J2EP-4_196-201	N	08/08/2016	GW Profile	196	201
J2 Range Eastern	BH-665	J2EP-4_186-191	N	08/08/2016	GW Profile	186	191
C Range	SSCRNGMID02	CRNGMID02_A	N	08/08/2016	Soil	0	0.25
J2 Range Eastern	BH-665	J2EP-4_176-181	N	08/08/2016	GW Profile	176	181
C Range	SSCRNGBR5-6A	CRNGBR5-6A_C	FR	08/08/2016	Soil	0	0.25
C Range	SSCRNGBR5-6A	CRNGBR5-6A_B	FR	08/08/2016	Soil	0	0.25

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 August to 31 August 2016

Area Of Concern	Location	Field Sample ID	Sample Type	Date Sampled	Matrix	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)
C Range	SSCRNGBR5-6A	CRNGBR5-6A_A	N	08/08/2016	Soil	0	0.25
C Range	SSCRNGS02	CRNGS02_A	N	08/08/2016	Soil	0	0.25
B Range	SSBRNGSW02	BRNGSW02_C	FR	08/08/2016	Soil	0	0.25
B Range	SSBRNGSW02	BRNGSW02_B	FR	08/08/2016	Soil	0	0.25
J2 Range Eastern	BH-665	J2EP-4_166-171	N	08/08/2016	GW Profile	166	171
B Range	SSBRNGSW02	BRNGSW02_A	N	08/08/2016	Soil	0	0.25
Former C Range	SSFCR136-B	FCR136-B_C	FR	08/08/2016	Soil	0	0.25
Former C Range	SSFCR136-B	FCR136-B_B	FR	08/08/2016	Soil	0	0.25
Former C Range	SSFCR136-B	FCR136-B_A	N	08/08/2016	Soil	0	0.25
Demolition Area 1	PR-EFF	PR-EFF-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	PR-MID-2	PR-MID-2-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	PR-MID-1	PR-MID-1-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	PR-INF	PR-INF-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	FPR-2-EFF-A	FPR-2-EFF-A-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	FPR-2-GAC-MID1A	FPR-2-GAC-MID1A-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	FPR2-POST-IX-A	FPR2-POST-IX-A-125A	N	08/04/2016	Process Water	0	0
Demolition Area 1	FPR-2-INF	FPR-2-INF-125A	N	08/04/2016	Process Water	0	0
J1 Range Southern	J1S-EFF	J1S-EFF-105A	N	08/04/2016	Process Water	0	0
J1 Range Southern	J1S-MID-2	J1S-MID-2-105A	N	08/04/2016	Process Water	0	0
J1 Range Southern	J1S-INF-2	J1S-INF-2-105A	N	08/04/2016	Process Water	0	0
J3 Range	J3-EFF	J3-EFF-119A	N	08/04/2016	Process Water	0	0
J3 Range	J3-MID-2	J3-MID-2-119A	N	08/04/2016	Process Water	0	0
J3 Range	J3-MID-1	J3-MID-1-119A	N	08/04/2016	Process Water	0	0
J3 Range	J3EWIP2	J3EWIP2_D7	N	08/04/2016	Ground Water	149.5	169.5
J3 Range	J3-INF	J3-INF-119A	N	08/04/2016	Process Water	0	0
L Range	MW-242M1	MW-242M1_F16	N	08/03/2016	Ground Water	235	245
L Range	MW-242M1	MW-242M1_F16D	FD	08/03/2016	Ground Water	235	245
Central Impact Area	CIA2-EFF	CIA2-EFF-31A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIA2-MID2	CIA2-MID2-31A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIA2-MID1	CIA2-MID1-31A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIA2-INF	CIA2-INF-31A	N	08/03/2016	Process Water	0	0
L Range	MW-595M2	MW-595M2_F16	N	08/03/2016	Ground Water	205.3	215.3
Demolition Area 1	BH-664	D1P-3_311-316	N	08/03/2016	GW Profile	311	316
L Range	MW-595M1	MW-595M1_F16	N	08/03/2016	Ground Water	255.3	265.3
Central Impact Area	CIA1-EFF	CIA1-EFF-31A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIA1-MID2	CIA1-MID2-31A	N	08/03/2016	Process Water	0	0
L Range	MW-596M1	MW-596M1_F16	N	08/03/2016	Ground Water	231.1	241.1
Central Impact Area	CIA1-MID1	CIA1-MID1-31A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIA1-INF	CIA1-INF-31A	N	08/03/2016	Process Water	0	0
L Range	90MW0034	90MW0034_F16	N	08/03/2016	Ground Water	94	99
Central Impact Area	CIAEW3-EFF	CIAEW3-EFF-02A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIAEW3-MIDGAC	CIAEW3-MIDGAC-02A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIAEW3-MIDIX	CIAEW3-MIDIX-02A	N	08/03/2016	Process Water	0	0
Central Impact Area	CIAEW3-INF	CIAEW3-INF-02A	N	08/03/2016	Process Water	0	0
Demolition Area 1	BH-664	D1P-3_301-306	N	08/03/2016	GW Profile	301	306
Demolition Area 1	MW-544M2	MW-544M2_T16	N	08/02/2016	Ground Water	112	122
Demolition Area 1	BH-664	D1P-3_291-296	N	08/02/2016	GW Profile	291	296
Demolition Area 1	MW-544M1	MW-544M1_T16	N	08/02/2016	Ground Water	162	172
Demolition Area 1	MW-545M1	MW-545M1_T16	N	08/02/2016	Ground Water	162	172
J2 Range Eastern	J2E-EFF-IH	J2E-EFF-IH-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-2H	J2E-MID-2H-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-1H	J2E-MID-1H-95A	N	08/02/2016	Process Water	0	0
Demolition Area 1	MW-545M2	MW-545M2_T16	N	08/02/2016	Ground Water	142	152
J2 Range Eastern	J2E-MID-2I	J2E-MID-2I-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-1I	J2E-MID-1I-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-INF-I	J2E-INF-I-95A	N	08/02/2016	Process Water	0	0
Demolition Area 1	BH-664	D1P-3_281-286	N	08/02/2016	GW Profile	281	286

N = Normal Sample
FD = Field Duplicate

TABLE 1
Sampling Progress: 1 August to 31 August 2016

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-554M2	MW-554M2_T16	N	08/02/2016	Ground Water	89.1	99.1
Demolition Area 1	MW-554M1	MW-554M1_T16	N	08/02/2016	Ground Water	120	130
J2 Range Eastern	J2E-EFF-K	J2E-EFF-K-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-2K	J2E-MID-2K-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-1K	J2E-MID-1K-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-INF-K	J2E-INF-K-95A	N	08/02/2016	Process Water	0	0
Demolition Area 1	BH-664	D1P-3_271-276	N	08/02/2016	GW Profile	271	276
J2 Range Eastern	J2E-EFF-J	J2E-EFF-J-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-2J	J2E-MID-2J-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-MID-1J	J2E-MID-1J-95A	N	08/02/2016	Process Water	0	0
J2 Range Eastern	J2E-INF-J	J2E-INF-J-95A	N	08/02/2016	Process Water	0	0
J2 Range Northern	J2N-EFF-G	J2N-EFF-G-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-2G	J2N-MID-2G-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-1G	J2N-MID-1G-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-INF-G	J2N-INF-G-119A	N	08/01/2016	Process Water	0	0
Demolition Area 1	BH-664	D1P-3_261-266	N	08/01/2016	GW Profile	261	266
J2 Range Northern	J2N-EFF-EF	J2N-EFF-EF-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-2F	J2N-MID-2F-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-1F	J2N-MID-1F-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-INF-EF	J2N-INF-EF-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-2E	J2N-MID-2E-119A	N	08/01/2016	Process Water	0	0
J2 Range Northern	J2N-MID-1E	J2N-MID-1E-119A	N	08/01/2016	Process Water	0	0
J1 Range Northern	J1N-EFF	J1N-EFF-34A	N	08/01/2016	Process Water	0	0
J1 Range Northern	J1N-MID2	J1N-MID2-34A	N	08/01/2016	Process Water	0	0
Demolition Area 1	BH-664	D1P-3_251-256	N	08/01/2016	GW Profile	251	256
J1 Range Northern	J1N-MID1	J1N-MID1-34A	N	08/01/2016	Process Water	0	0
J1 Range Northern	J1N-INF2	J1N-INF2-34A	N	08/01/2016	Process Water	0	0

N = Normal Sample
FD = Field Duplicate

TABLE 2
VALIDATED EXPLOSIVE AND PERCHLORATE RESULTS
Data Received August 2016

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-157M3	MW-157M3_F16	70	80	07/28/2016	SW6850	Perchlorate	0.067	J	UG/L	2.0		0.019	0.20
J3 Range	MW-157M1	MW-157M1_F16	154	164	07/28/2016	SW6850	Perchlorate	0.062	J	UG/L	2.0		0.019	0.20
J3 Range	MW-217M3	MW-217M3_F16	101	106	07/28/2016	SW6850	Perchlorate	0.077	J	UG/L	2.0		0.019	0.20
J3 Range	90PZ0204	90PZ0204_F16	80	85	07/27/2016	SW6850	Perchlorate	0.071	J	UG/L	2.0		0.019	0.20
J3 Range	90MP0059B	90MP0059B_F16	116.4	118.9	07/25/2016	SW6850	Perchlorate	0.15	J	UG/L	2.0		0.019	0.20
J3 Range	MW-243M1	MW-243M1_F16	114.5	124.5	07/21/2016	SW6850	Perchlorate	0.42		UG/L	2.0		0.019	0.20
J3 Range	MW-143M3	MW-143M3_F16	107	112	07/20/2016	SW6850	Perchlorate	0.19	J	UG/L	2.0		0.019	0.20
J3 Range	MW-143M3	MW-143M3_F16	107	112	07/20/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.31	J	UG/L	400		0.019	0.20
J3 Range	MW-143M2	MW-143M2_F16	117	122	07/20/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.21	J	UG/L	400		0.019	0.20
J3 Range	MW-143M2	MW-143M2_F16	117	122	07/20/2016	SW6850	Perchlorate	0.54		UG/L	2.0		0.019	0.20
J3 Range	MW-143M1	MW-143M1_F16	144	154	07/20/2016	SW6850	Perchlorate	0.90		UG/L	2.0		0.019	0.20
J3 Range	MW-193S	MW-193S_F16	32.5	37.5	07/20/2016	SW6850	Perchlorate	0.078	J	UG/L	2.0		0.019	0.20
J3 Range	MW-193S	MW-193S_F16	32.5	37.5	07/20/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.74		UG/L	0.60	X	0.025	0.20
J3 Range	MW-193S	MW-193S_F16D	32.5	37.5	07/20/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.72		UG/L	0.60	X	0.025	0.20
J3 Range	MW-193M1	MW-193M1_F16	57.5	62.5	07/20/2016	SW6850	Perchlorate	0.063	J	UG/L	2.0		0.019	0.20
J3 Range	MW-193M1	MW-193M1_F16	57.5	62.5	07/20/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.23	J	UG/L	400		0.019	0.20
J3 Range	MW-193M1	MW-193M1_F16D	57.5	62.5	07/20/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.24	J	UG/L	400		0.019	0.20
J3 Range	MW-232M2	MW-232M2_F16	61	66	07/19/2016	SW6850	Perchlorate	0.57		UG/L	2.0		0.019	0.20
J3 Range	MW-232M1	MW-232M1_F16	77.5	82.5	07/19/2016	SW6850	Perchlorate	0.20		UG/L	2.0		0.019	0.20
J3 Range	MW-243M2	MW-243M2_F16	84.5	94.5	07/19/2016	SW6850	Perchlorate	0.35		UG/L	2.0		0.019	0.20
J3 Range	MW-295M2	MW-295M2_F16	117	127	07/18/2016	SW6850	Perchlorate	0.072	J	UG/L	2.0		0.019	0.20
J3 Range	MW-295M1	MW-295M1_F16	145	155	07/18/2016	SW6850	Perchlorate	0.66		UG/L	2.0		0.019	0.20
J3 Range	MW-359M2	MW-359M2_F16	148.6	158.6	07/18/2016	SW6850	Perchlorate	0.067	J	UG/L	2.0		0.019	0.20
J3 Range	MW-329M2	MW-329M2_F16	150.1	160.1	07/14/2016	SW6850	Perchlorate	0.62		UG/L	2.0		0.019	0.20
J3 Range	MW-329M1	MW-329M1_F16	180	190	07/14/2016	SW6850	Perchlorate	0.27		UG/L	2.0		0.019	0.20
J3 Range	MW-227M3	MW-227M3_F16	65	75	07/14/2016	SW6850	Perchlorate	0.060	J	UG/L	2.0		0.019	0.20
J3 Range	MW-163S	MW-163S_F16	38	48	07/13/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.6		UG/L	0.60	X	0.025	0.20
J3 Range	MW-163S	MW-163S_F16	38	48	07/13/2016	SW6850	Perchlorate	3.8		UG/L	2.0	X	0.019	0.20
J3 Range	MW-163S	MW-163S_F16D	38	48	07/13/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.6		UG/L	0.60	X	0.025	0.20
J3 Range	MW-198M1	MW-198M1_F16	150	155	07/13/2016	SW8330	Tetryl	0.49		UG/L	365		0.033	0.20
J3 Range	MW-198M4	MW-198M4_F16	70	75	07/13/2016	SW6850	Perchlorate	0.49		UG/L	2.0		0.019	0.20
J3 Range	MW-198M4	MW-198M4_F16	70	75	07/13/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3		UG/L	0.60	X	0.025	0.20
J3 Range	MW-198M4	MW-198M4_F16	70	75	07/13/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	4.3		UG/L	400		0.019	0.20
J3 Range	MW-198M4	MW-198M4_F16D	70	75	07/13/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	2.3		UG/L	0.60	X	0.025	0.20
J3 Range	MW-198M4	MW-198M4_F16D	70	75	07/13/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	4.2		UG/L	400		0.019	0.20
J3 Range	MW-198M3	MW-198M3_F16	100	105	07/13/2016	SW6850	Perchlorate	1.5		UG/L	2.0		0.019	0.20
J3 Range	MW-198M3	MW-198M3_F16D	100	105	07/13/2016	SW6850	Perchlorate	1.5		UG/L	2.0		0.019	0.20
J3 Range	MW-198M2	MW-198M2_F16	120	125	07/13/2016	SW6850	Perchlorate	1.3		UG/L	2.0		0.019	0.20
J3 Range	MW-227M2	MW-227M2_F16	110	120	07/12/2016	SW6850	Perchlorate	8.0		UG/L	2.0	X	0.019	0.20
J3 Range	MW-227M2	MW-227M2_F16D	110	120	07/12/2016	SW6850	Perchlorate	7.9		UG/L	2.0	X	0.019	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 August 2016

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-576M3	MW-576M3_F16	98.9	108.9	07/12/2016	SW6850	Perchlorate	0.47		UG/L	2.0		0.019	0.20
J3 Range	MW-576M2	MW-576M2_F16	133.9	143.9	07/12/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22		UG/L	0.60		0.025	0.20
J3 Range	MW-576M2	MW-576M2_F16	133.9	143.9	07/12/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.35		UG/L	400		0.019	0.20
J3 Range	MW-576M2	MW-576M2_F16	133.9	143.9	07/12/2016	SW6850	Perchlorate	13.7		UG/L	2.0	X	0.038	0.40
J3 Range	MW-576M2	MW-576M2_F16D	133.9	143.9	07/12/2016	SW6850	Perchlorate	13.5		UG/L	2.0	X	0.038	0.40
J3 Range	MW-576M1	MW-576M1_F16	173.9	183.9	07/12/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.31		UG/L	0.60		0.025	0.20
J3 Range	MW-576M1	MW-576M1_F16	173.9	183.9	07/12/2016	SW6850	Perchlorate	13.9		UG/L	2.0	X	0.019	0.20
J3 Range	MW-576M1	MW-576M1_F16D	173.9	183.9	07/12/2016	SW6850	Perchlorate	14.6		UG/L	2.0	X	0.019	0.20
J3 Range	MW-343M2	MW-343M2_F16	166.8	171.8	07/11/2016	SW6850	Perchlorate	0.25		UG/L	2.0		0.019	0.20
J3 Range	MW-343M1	MW-343M1_F16	214.8	224.8	07/11/2016	SW6850	Perchlorate	0.63		UG/L	2.0		0.019	0.20
J3 Range	MW-155M1	MW-155M1_F16	124	134	07/07/2016	SW6850	Perchlorate	0.25		UG/L	2.0		0.019	0.20
J3 Range	MW-142M2	MW-142M2_F16	140	150	07/07/2016	SW6850	Perchlorate	0.13	J	UG/L	2.0		0.019	0.20
J3 Range	MW-142M2	MW-142M2_F16	140	150	07/07/2016	SW8330	Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	0.28	J	UG/L	400		0.019	0.20
J3 Range	MW-636M2	MW-636M2_F16	110.5	120.5	07/07/2016	SW6850	Perchlorate	1.0		UG/L	2.0		0.019	0.20
J3 Range	MW-144M2	MW-144M2_F16	130	140	07/07/2016	SW6850	Perchlorate	0.049	J	UG/L	2.0		0.019	0.20
Former A Range	MW-536S	MW-536S_S16	158	168	06/20/2016	SW6850	Perchlorate	0.093	J	UG/L	2.0		0.019	0.20
Former A Range	MW-249M3	MW-249M3_S16	154	164	06/20/2016	SW6850	Perchlorate	0.042	J	UG/L	2.0		0.019	0.20
J1 Range Southern	MW-646M2	MW-646M2_R3	168	178	06/16/2016	SW6850	Perchlorate	0.054	J	UG/L	2.0		0.019	0.20
J1 Range Southern	MW-646M1	MW-646M1_R3	198	208	06/16/2016	SW6850	Perchlorate	0.065	J	UG/L	2.0		0.019	0.20
J1 Range Southern	MW-645M1	MW-645M1_R3	183.5	193.5	06/15/2016	SW8330	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	1.4		UG/L	0.60	X	0.025	0.20

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

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