MONITORING WELL DEVELOPMENT FORM

LOCATION	Site: Xcel-Comanche	LocID: MW-1	Date: 08/20/2020
	Project Name: Longhorn Army Ammunition Plant	Project #: 10217175	Recorded By: JM Checked By:
EQUIPMENT	Water Quality Meter Type/ID #: YSI Pro Plus		Water Level Indicator Type/ID #: Geotech 100' W.L. Meter
	Equipment Group:		Equipment Group: Hach 2100Q Turbidimeter
	Development Equipment: Steel Bailer & Geosub Pump		Equipment Decon.: 3-Bucket
WELL INFO	Casing I.D. (in) [a]: 2"	Unit Casing Volume (gal/lin ft) [b]: 0.16	Initial Depth to Water (ft) [c]: 31.19' BTOC
	Total Well Depth (ft) [d]: 42.66' BTOC	Water Column Thickness (ft) [d-c]: 11.47'	Well Volume (gal) {[d-c] x b}:
	Ground Condition of Well:		Remarks:

CASING INFO											
Casing I.D. (in) [a]:	1.5	2.0	2.2	3.0	4.0	4.3	5.0	6.0	7.0	8.0
Unit Casing Volume (gal/lin ft) [b]:	0.09	0.16	0.20	0.37	0.65	0.75	1.0	1.5	2.0	2.6

Date	Time (24 hr)	Method (pump, surge, bail)	Water Level (FTOC)	Volume Removed ~~(gal)~~ L	Pumping Rate (gpm)	Temp. (C)	pH	Conductivity (mS/cm)	DO (mg/L)	Turb. (NTU)	ORP ~~Sed. (mL/L)~~ mV	Radiation ( )	Remarks (odor, clarity, etc.)
08/20	1010	BAIL	31.19'	1.0L	—	18.9	6.90	21451	2.50	OR	181.6		
	1015	↓		4.0L		17.9	6.93	20856	2.26	OR	176.3		
	1020			7.0L		17.8	6.95	19545	2.61	OR	175.1		
	1025			10.0L		17.6	6.97	20274	2.74	OR	175.7		
	1030			13.0L		17.5	6.96	19939	2.66	OR	176.4		
	1035			16.0L		17.5	6.99	20173	2.93	OR	176.6		
	1040			19.0L		17.2	6.97	20988	2.58	OR	177.3		
	1045			22.0L		17.4	7.00	20613	2.94	OR	177.9		
	1050			25.0L		17.3	7.01	20165	3.10	OR	178.3		
	1055			28.0L		17.1	7.02	20277	3.12	OR	179.1		
	1100			31.0L		17.3	7.04	19105	3.57	OR	179.0		
	1105	↓		34.0L		17.3	7.03	19704	3.29	OR	179.2		

Development Criteria: 1) sediment <0.75 mL/L, 2) turbidity within 10 NTU range for 30 minutes, 3) +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, AND 4) remove water added during drilling and construction

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	Project Name: ~~Longhorn Army Ammunition Plant~~	Project #: 10217175

Date	Time (24 hr)	Method (pump, surge, bail)	Water Level (FTOC)	Volume Removed ~~(gal)~~ L	Pumping Rate (gpm)	Temp. (C)	pH	Conductivity (mS/cm)	DO (mg/L)	Turb. (NTU)	ORP ~~Sed. (mg/L)~~ mV	Radiation ( )	Remarks (odor, clarity, etc.)
08/20	1110	BAIL		37.0L	—	17.5	7.04	20357	3.30	OR	179.6		
	1115			40.0L		17.4	7.03	19720	3.49	OR	180.3		
	1120			—		—	—	—	—	—	—		TAKE BREAK
	1125			43.0L		17.6	7.01	20643	3.45	OR	180.9		
	1130			46.0L		17.5	7.03	20223	3.38	OR	181.4		
	1135			49.0L		17.5	7.02	20514	3.28	OR	181.1		
	1140			52.0L		17.4	7.01	20327	3.30	OR	182.5		
	1145			55.0L		17.7	7.02	20871	3.19	OR	182.5		
	1150			58.0L		17.5	7.02	20195	3.28	OR	183.0		
	1155			61.0L		17.6	7.02	20341	3.30	OR	183.3		
	1200			64.0L		18.2	6.99	20571	3.34	OR	182.3		
	1205			67.0L		17.8	6.99	21246	3.13	OR	184.4		
	1210			70.0L		17.7	7.01	20936	3.22	OR	184.5		
	1215			73.0L		18.9	6.99	20613	3.37	OR	193.8		
	1220			76.0L		18.0	6.97	20841	2.97	OR	186.1		
	1225			79.0L		18.1	7.00	20817	3.12	OR	184.0		STOP TO FIX TURB. METER
	1250			82.0L		18.0	6.97	20184	3.29	OR	186.9		
	1255			85.0L		18.1	6.99	20279	3.29	OR	185.6		
	1300			88.0L		18.0	6.97	20414	3.79	OR	186.0		
	1305	↓		91.0L		18.0	7.00	19757	3.48	OR	186.9		

Development Criteria: 1) sediment <0.75 mL/L, 2) turbidity within 10 NTU range for 30 minutes, 3) +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, AND 4) remove water added during drilling and construction

MONITORING WELL DEVELOPMENT FORM

LOCATION	Site: XCEL-COMANCHE	LocID: MW-1
	Project Name: Longhorn Army Ammunition Plant	Project #: 10217175

Date	Time (24 hr)	Method (pump, surge, bail)	Water Level (FTOC)	Volume Removed ~~(gal)~~ L	Pumping Rate (gpm)	Temp. (C)	pH	Conductivity (mS/cm)	DO (mg/L)	Turb. (NTU)	ORP ~~Sed. (mg/L)~~ MV	Radiation ( )	Remarks (odor, clarity, etc.)
08/20	1310	BAIL		94.0L	—	18.4	7.00	19610	3.45	OR	191.4		
	1315	↓		97.0L		19.3	6.97	19698	2.67	OR	189.3		
	1320			100.0L		17.7	6.97	20562	3.06	OR	192.4		
	1325			103.0L		18.0	6.98	21076	2.90	OR	197.2		
	1330			106.0L		18.5	6.98	20314	2.96	OR	196.8		
	1335			109.0L		18.4	6.98	21045	2.91	OR	197.3		
	1340			112.0L		18.6	6.98	20908	2.94	OR	198.1		
	1345			115.0L		18.5	6.99	21052	2.90	OR	198.4		
	1350			118.0L		20.7	7.02	19526	3.13	OR	200.0		
	1355			121.0L		20.2	7.06	19392	2.93	OR	199.2		
	1400			124.0L		20.1	7.04	19461	2.98	OR	198.4		
	1405			127.0L		19.9	7.03	20001	2.86	OR	198.1		
	1410			130.0L		19.5	6.98	20056	2.81	OR	197.6		
	1415			133.0L		19.4	6.96	21043	2.46	OR	198.1		
	1420			136.0L		19.4	6.94	21310	2.21	OR	198.2		TAKE BREAK
	1445			139.0L		18.7	6.98	21201	2.98	OR	198.0		
	1450			142.0L		18.0	6.99	20539	3.01	OR	197.4		
	1455			145.0L		18.1	6.99	20401	2.89	OR	198.6		
	1500			148.0L		18.3	7.00	20457	2.76	OR	202.9		
	1505	↓		151.0L		17.8	7.00	20331	2.83	OR	196.4		

Development Criteria: 1) sediment <0.75 mL/L, 2) turbidity within 10 NTU range for 30 minutes, 3) +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, AND 4) remove water added during drilling and construction

MONITORING WELL DEVELOPMENT FORM

LOCATION	Site: XCEL-COMANCHE	LocID: MW-1
	Project Name: ~~Longhorn Army Ammunition Plant~~	Project #: 10217175

Date	Time (24 hr)	Method (pump, surge, bail)	Water Level (FTOC)	Volume Removed ~~(gal)~~ L	Pumping Rate (gpm)	Temp. (C)	pH	Conductivity (mS/cm)	DO (mg/L)	Turb. (NTU)	ORP ~~Sed. (mg/L)~~ mV	Radiation ( )	Remarks (odor, clarity, etc.)
08/20	1510	BAIL		154.0L	—	17.3	7.02	20389	2.97	OR	193.7		
	1515	↓		157.0L		17.2	7.02	20398	2.75	OR	193.5		
	1520			160.0L		17.5	7.01	20470	2.68	OR	193.3		
	1525			163.0L		17.3	7.00	20941	2.66	OR	192.9		
	1530			166.0L		17.1	7.02	21015	2.63	OR	192.4		
	1535			169.0L		17.0	7.02	21056	2.57	OR	191.6		
	1540			172.0L		17.0	7.02	21036	2.68	OR	194.2		
	1545			175.0L		17.0	7.03	21022	2.96	OR	195.0		
	1550			178.0L		17.2	7.02	21006	2.68	OR	196.0		
	1555			181.0L		17.3	7.02	20993	2.70	OR	196.1		
	1600			184.0L		17.1	7.03	20814	2.89	OR	196.3		
	1605			187.0L		17.2	7.04	20808	2.83	OR	196.5		
	1610			190.0L		17.1	7.03	20732	2.88	OR	196.9		
	1615			193.0L		17.2	7.03	20628	2.98	OR	197.4		
	1620			196.0L		17.1	7.03	20469	2.88	OR	197.6		
	1625			199.0L		17.3	7.03	20348	2.81	OR	198.1		
	1630			202.0L		17.5	7.01	20244	2.81	OR	200.3		
	1635			205.0L		17.9	6.95	21013	2.80	OR	201.1		
	1640			208.0L		18.7	6.99	21658	2.79	OR	201.8		
	1645	↓		211.0L		18.0	7.04	19982	2.80	895	204.7		

Development Criteria: 1) sediment <0.75 mL/L, 2) turbidity within 10 NTU range for 30 minutes, 3) +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, AND 4) remove water added during drilling and construction

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LOCATION	Site: XCEL-COMANCHE	LocID: MW-1
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Date	Time (24 hr)	Method (pump, surge, bail)	Water Level (FTOC)	Volume Removed ~~(gal)~~ L	Pumping Rate (gpm)	Temp. (C)	pH	Conductivity (mS/cm)	DO (mg/L)	Turb. (NTU)	ORP ~~Sed. (mg/L)~~ mV	Radiation ( )	Remarks (odor, clarity, etc.)
08/20 ~~1650~~	1650	BAIL		214.0L	—	18.0	7.06	19316	2.91	678	208.6		
~~1655~~	1655	BAIL		217.0L		17.3	7.08	18483	3.10	482	210.1		
~~1700~~	1700	BAIL		220.0L		17.4	6.99	19178	2.33	443	201.1		
08/21	0855	PUMP	31.30'	227.0L	1.4L/min	17.0	6.87	25308	1.26	191	172.7		RETURN 08/21
	0900	↓	↓	234.0L	↓	17.0	6.88	20902	1.91	62.8	172.2		
	0905	↓	↓	241.0L	↓	16.9	6.88	21021	1.67	108	172.2		SURGE
	0910	↓	↓	248.0L	↓	16.9	6.88	19577	1.88	63.7	171.7		
	0915	↓	↓	255.0L	↓	16.9	6.88	19483	1.81	28.5	171.9		SURGE
	0920	↓	↓	262.0L	↓	17.0	6.88	20535	1.65	131	171.7		
	0925	↓	↓	269.0L	↓	17.0	6.88	19177	1.78	47.7	171.7		
	0930	↓	↓	276.0L	↓	17.0	6.88	19298	1.78	22.1	172.3		SURGE
	0935	↓	↓	283.0L	↓	16.9	6.88	20287	1.76	42.4	172.5		
	0940	↓	↓	290.0L	↓	16.9	6.88	18954	1.88	21.2	172.3		
	0945	↓	↓	297.0L	↓	16.9	6.88	18995	1.88	9.51	172.3		
	0950	↓	↓	304.0L	↓	16.9	6.88	19020	1.88	8.14	172.8		
	0955	↓	↓	311.0L	↓	16.9	6.88	19011	1.88	4.18	172.9		

Development Criteria: 1) sediment <0.75 mL/L, 2) turbidity within 10 NTU range for 30 minutes, 3) +/- 0.5 C, +/- 0.1 pH, +/- 3 % conductivity, +/- 10% DO for 3 consecutive readings, AND 4) remove water added during drilling and construction