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October 12, 2022

Ms. Jennifer Nobui, P.G.  
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5200 Oakland Avenue N.E. Suite 100  
Albuquerque, New Mexico 87113

**Re: Remediation and Bioventing Pilot Test Summary and Full-Scale Bioventing System Recommendation Report  
WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release  
NMOCD Incident No. NOY1822242858  
Unit P, Section 11, Township 20S, Range 36E  
Latitude 32.583874, Longitude -103.317460  
Lea County, New Mexico**

Dear Ms. Nobui:

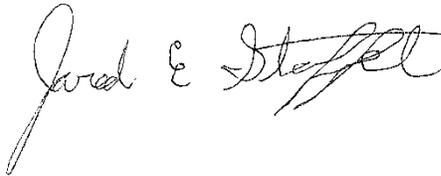
On behalf of Holly Energy Partners – Operating, L.P. (HEP), TRC Environmental Corporation (TRC) is providing this *Remediation and Bioventing Pilot Test Summary and Full-Scale Bioventing System Recommendation Report* (Report). This document was prepared to summarize the August and September 2022 remedial activities performed at HEP's WTX to EMSU Battery to Byrd Pump Segment gathering line (Site), including advancement of one soil boring, excavation of affected surface soil, and performance of a seven-day bioventing pilot test. The remedial activities were conducted in accordance with the November 2021 *Site Characterization Report and Remediation Workplan* and the April 2022 *Remediation Workplan Addendum*, which were approved by New Mexico Oil Conservation Division (NMOCD) on December 9, 2021, and April 5, 2022, respectively.

Based on the results of the bioventing pilot test, the Report includes the proposed design for implementation of a full-scale bioventing system at the Site, which will be installed upon NMOCD's approval.

Ms. Jennifer Nobui, P.G.  
Remediation and Bioventing Pilot Test Summary and Full-Scale Bioventing System  
Recommendation Report  
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If you should have any questions or comments regarding this project, please contact Arsin Sahba of HF Sinclair at (972) 689-8540 or Jared Stoffel of TRC at (432) 238-3003.

Sincerely,



Jared Stoffel, P.G.  
Project Manager



Bryan Gilbert, P.G.  
Austin Office ECW Practice Leader

cc: Mike Bratcher, New Mexico Energy, Minerals, and Natural Resources Department, Artesia,  
New Mexico  
L&K Ranch LLC, Hobbs, New Mexico  
Melanie Nolan, HEP, Artesia, New Mexico  
Arsin Sahba, P.G., HF Sinclair, Dallas, Texas

**Attachment:**

Remediation and Bioventing Pilot Test Summary and Full-Scale Bioventing System  
Recommendation Report





# REMEDIATION AND BIOVENTING PILOT TEST SUMMARY AND FULL-SCALE BIOVENTING SYSTEM RECOMMENDATION REPORT

WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release  
NMOCD Incident No. NOY1822242858  
Unit P, Section 11, Township 20S, Range 36E  
Latitude 32.583874, Longitude -103.317460  
Lea County, New Mexico

October 12, 2022

**Prepared For:**

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## 1.0 INTRODUCTION

TRC Environmental Corporation (TRC) has prepared this *Remediation and Bioventing Pilot Test Summary and Full-Scale Bioventing System Recommendation Report* (Report) on behalf of Holly Energy Partners – Operating, L.P. (HEP). This document was prepared to summarize the August and September 2022 remedial activities performed at HEP’s WTX to EMSU Battery to Byrd Pump Segment gathering line (the “Site”). The remedial activities were proposed in the November 2021 *Site Characterization Report and Remediation Workplan* (SCR & RWP) (TRC, 2021) and the April 2022 *Remediation Workplan Addendum* (RWP Addendum) (TRC, 2022), which were approved by New Mexico Oil Conservation Division (NMOCD) on December 9, 2021 (NMOCD, 2021) and April 5, 2022 (NMOCD, 2022), respectively. Copies of e-mail correspondence between HEP, TRC, and NMOCD are presented in Appendix A.

The Site is located on land owned by L&K Ranch LLC near County Road 46 in Lea County, New Mexico. The Site is located within Unit P, Section 11, Township 20 South, Range 36 East, at latitude 32.583874, longitude -103.317460. The Site location is depicted on a topographic map presented as Figure 1.

Summaries of Site investigations conducted in 2018, 2020, and 2021 were included in the December 2020 *Site Characterization Report* (SCR) (TRC, 2020), which was approved by NMOCD on December 31, 2020 (NMOCD, 2020), and the November 2021 SCR & RWP (TRC, 2021), and thus are not included herein.

This Report documents the following activities completed in August and September 2022, which were conducted in accordance with the April 2022 RWP Addendum (TRC, 2022),:

- Advancement of soil boring SB-19A for soil sample analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX);
- Excavation of affected surface soil to a depth 4.5 feet with total petroleum hydrocarbon (TPH) concentrations above the Closure Criterion; and
- Performance of seven-day bioventing pilot test.

Based on the results of the bioventing pilot test, this Report includes the proposed design for implementation of a full-scale bioventing system at the Site, which will be installed upon NMOCD’s approval.

Quarterly groundwater monitoring (i.e., third quarter 2022) of the existing monitoring well network (MW-1 through MW-5) was conducted in August 2022; the fourth quarter 2022 groundwater monitoring event is scheduled to be completed in November 2022. The 2022 groundwater monitoring activities will be documented in an *Annual Groundwater Monitoring Report* (Annual Report) to be submitted to NMOCD by April 30, 2023.



## 2.0 SOIL BORING SB-19A

### 2.1 Summary of Drilling and Sampling Activities

As requested by NMOCD, one soil boring was drilled immediately adjacent to (i.e., within 5 feet of) previous soil boring location SB-19 for collection of soil samples for laboratory analysis of BTEX. On August 15, 2022, soil boring SB-19A was drilled to a depth of 35 feet below ground surface (bgs) using a hollow-stem auger drill rig. The field procedures used were consistent with those used during the 2020 and 2021 assessment activities. Soil cores were collected from the boring using a split spoon sampler. The soil cores were continuously logged for lithology, field observations of the potential presence of petroleum hydrocarbons, including hydrocarbon odor and staining, and photo-ionization detector (PID) readings. The locations of soil borings SB-19A and SB-19 are depicted on Figure 2. A boring log for SB-19A is provided in Appendix B.

Soil samples were collected from soil boring SB-19A and analyzed for BTEX by EPA Method SW8260 from the same intervals previously sampled for TPH analysis in May 2019 at soil boring SB-19, as follows: 2 to 3 feet bgs; 4 to 5 feet bgs; 11 to 12 feet bgs; 19 to 20 feet bgs; 24 to 25 feet bgs; 29 to 30 feet bgs; and 34 to 35 feet bgs. One duplicate sample was collected from the 29 to 30 feet bgs interval. Following sampling, the soil boring was backfilled with hydrated bentonite chips.

The lithology observed at boring SB-19A was similar to that observed at previous boring SB-19 with the following exceptions:

- At SB-19A, fine sand with clay was observed from 12 to 20 feet bgs. This interval was observed as caliche at SB-19.
- At SB-19A, fine sand with clay was observed from 20 to 33.5 feet bgs. This interval was observed as sandy clay at SB-19.

Hydrocarbon odor was observed from 3 to 35 feet bgs. PID readings above 50 parts per million (ppm) were measured from 12 to 35 feet bgs. No hydrocarbon staining was observed.

A photographic log of the August 2022 drilling activities is presented in Appendix C.

### 2.2 Soil Sample Analytical Results

As shown in Table 1, detected concentrations and/or non-detect reporting limits for benzene and total BTEX were below the NMOCD Closure Criteria in all of the samples collected from soil boring SB-19A. This is consistent with previous assessments conducted at the Site where benzene and total BTEX concentrations were below NMOCD Closure Criteria.

A summary table of the benzene and BTEX analytical results relative to the Closure Criteria is provided in Table 1. A copy of the laboratory analytical report is provided in Appendix D.



### **2.3 Laboratory Analytical Data Quality Assurance/Quality Control Results**

The data report generated by ALS Laboratory in Houston, Texas for the sampling activities conducted in August 2022 was reviewed to ensure that reported analytical results met data quality objectives.

Based on the data review, it was determined that analytical results for reported concentrations of target analytes are defensible and that measurement data reliability is within the expected limits of sampling and analytical error. All analytical results are usable for characterization of soil at the Site. A copy of the laboratory analytical report is provided in Appendix D.

## **3.0 EXCAVATION OF SURFACE SOIL**

### **3.1 Excavation and Confirmation Sampling**

Excavation of surface soil with TPH concentrations above Closure Criterion was conducted to a depth of 4.5 feet bgs on August 17, 18, and 25, 2022. An excavator was used for excavation activities in areas away from the pipeline, while hydro-excavation was conducted in the immediate vicinity of and beneath the pipeline. The excavation was extended laterally from the extent proposed in the April 2022 RWP Addendum (TRC, 2022) until PID readings and visual and olfactory evidence indicated TPH concentrations were likely below Closure Criterion, at which point confirmation samples were collected for laboratory analysis. The wellhead for MW-1 was protected during excavation activities using plywood; the plywood was removed following backfilling.

In accordance with the November 2021 SCR & RWP (TRC, 2021) and April 2022 RWP Addendum (TRC, 2022), excavation sidewall confirmation soil samples were collected every 100 linear feet, while excavation bottom (floor) confirmation soil samples were collected every 200 square feet to document conditions at the excavation sidewalls and bottom prior to backfilling. Confirmation soil samples were collected using laboratory-supplied containers, immediately placed on ice, and delivered to ALS Laboratories in Houston, Texas for analysis of TPH by EPA Method 8015M.

Sidewall confirmation sample analytical results indicated the sum of TPH gasoline range organics (GRO), diesel range organics (DRO), and motor oil range organics (MRO) (i.e., total TPH) concentrations were below the Closure Criterion except for the sidewall sample collected along the southern excavation boundary (CS-SW-3@2.25'). The excavation was extended approximately three feet to the south and an additional sidewall confirmation sample was collected along the southern sidewall (CS-SW-3a@2.25'); the total TPH concentration for CS-SW-3a@2.5' was below the Closure Criterion.

Approximately 520 cubic yards of excavated soil (ex situ) was temporarily stockpiled on plastic sheeting at the Site pending transportation to an off-Site disposal facility.



Bottom confirmation sample analytical results indicated total TPH concentrations exceeded the Closure Criterion in five of the seven bottom sample locations (CS-1@4.5', CS-2@4.5' [original and duplicate samples], CS-3@4.5', CS-5@4.5', and CS-6@4.5'). As described in the November 2021 SCR & RWP (TRC, 2021) and April 2022 RWP Addendum (TRC, 2022), soil below 4.5 feet will be addressed by bioventing and thus deeper soil excavation was not required, as described below in Section 5.0.

A summary of the TPH analytical results relative to the Closure Criterion is provided in Table 1. The proposed excavation extent in the April 2022 RWP Addendum, actual excavation extent, and confirmation soil sample locations are shown on Figure 3. A photographic log of the August 2022 excavation activities is presented as Appendix C. Copies of the laboratory analytical reports are provided in Appendix D.

### **3.2 Excavated Soil Disposal**

On August 19 and September 1, 2022, 480 and 40 cubic yards of excavated soil (ex situ), respectively, were transported to J&L Landfarm in Hobbs, New Mexico, an NMOCD-permitted disposal facility, under non-hazardous waste manifest. Copies of the disposal manifests are provided in Appendix E.

### **3.3 Backfilling and Surface Restoration**

On September 1, 2022, the excavation was backfilled to original grade using clean, imported fill. Pursuant to 19.15.29.13 NMAC, the area disturbed during remedial activities was restored to pre-release conditions by surface grading and reseeded. A photographic log of the backfilled and restored excavation is presented as Appendix C.

### **3.4 Laboratory Analytical Data Quality Assurance/Quality Control Results**

Data reports generated by ALS Laboratories in Houston, Texas for the confirmation sampling activities conducted in August 2022 were reviewed to ensure that reported analytical results met data quality objectives.

Based on the data review, it was determined that analytical results for reported concentrations of target analytes are defensible and that measurement data reliability is within the expected limits of sampling and analytical error. All analytical results are usable for characterization of soil at the Site. Copies of the laboratory analytical reports are provided in Appendix D.

## **4.0 BIOVENTING PILOT TEST**

Bioventing systems are proven to facilitate bioremediation of soil affected by large-chain, non-volatile hydrocarbons such as the TPH DRO and MRO, which represent the vast majority of TPH present in soil at the Site. Bioventing facilitates bioremediation by aerating soils with ambient



air, which has a high oxygen content. The increased oxygen levels promote populations of aerobic bacteria to aerobically degrade hydrocarbons present in soil.

From August 9 to 15, 2022, HEP performed a seven-day bioventing pilot test at the Site to evaluate the effectiveness of the technology and determine the optimum operational parameters to maximize treatment of TPH-affected soil at depths greater than 4.5 feet bgs. The objectives of the bioventing pilot test were:

1. Determine if ambient air from bioventing is able to propagate through the subsurface in order to promote populations of aerobic bacteria to degrade hydrocarbons present in Site soil.
2. Determine the effective radius of influence (ROI) of bioventing at the Site.
3. Estimate the aerobic degradation rate at the Site based on the results of a post-pilot test in-situ respirometry test.
4. Utilize results of the bioventing pilot test to determine if bioventing is an effective remedy for the Site and, if so, determine the optimum Site-specific design and operational parameters to maximize treatment of TPH-affected soil.

A summary of the pilot test activities and results is provided below.

#### **4.1 Pilot Test Design and Operation**

Bioventing pilot test field activities commenced on August 3, 2022, to determine the most appropriate and effective bioventing equipment for use at the Site. Multiple configurations of bioventing equipment were utilized, including several different air pumps and compressors, as follows:

1. A generator-powered 120-volt electric blower rated at 285 cubic feet per minute (cfm) at low pressure was utilized to inject ambient air into MW-1. This blower was selected based on the generally sandy lithology of the vadose zone, which was anticipated to be permeable with minimal backpressure. The blower was not able to overcome the backpressure in the subsurface and achieve the target flow rates of 6 to 18 cfm.
2. A generator-powered, 1-horsepower, 230-volt, combination rotary vane blower and compressor rated at 18 cfm at 10 pounds per square inch (psi) was utilized to inject ambient air into MW-1. The blower was not able to overcome the backpressure in the subsurface and achieve the target flow rates of 6 to 18 cfm.
3. Two gasoline-powered, 1-horsepower air compressors, each rated at 18 cfm at 90 psi, were utilized to inject ambient air into MW-1. Initially, one compressor was utilized, however it was unable to achieve flow rates above 11 cfm; therefore, a second compressor was added. This combination of air compressors was able to overcome the back pressure in the subsurface and achieve and sustain the target flow rates of 6 to 18 cfm.



The seven-day bioventing pilot test commenced on August 9, 2022, utilizing one to two gasoline-powered, 1-horsepower air compressors. The air compressors were attached to the MW-1 wellhead using above-ground piping and connections with flexible polyvinyl chloride (PVC) couplings. Two Magnehelic differential pressure gauges were installed between the air compressors and injection well MW-1. A port with a Dwyer air velocity meter was positioned between the second pressure gauge and the MW-1 wellhead to monitor air velocity and calculate air flow.

At each observation well (MW-2 through MW-5), a PVC wye and flexible PVC couplings were used to facilitate pressure and soil gas monitoring at the wellheads. A Magnehelic differential pressure gauge was attached to PVC slip cap affixed to one wye port. A second PVC slip cap was utilized to maintain pressure and was removed to collect monitoring data at each observation well, as described in Section 4.2.

The locations of the bioventing pilot test injection well (MW-1) and bioventing observation wells (MW-2 through MW-5) are shown on Figure 4. A bioventing pilot test process flow diagram is shown on Figure 5.

#### 4.2 Pilot Test Operation and Monitoring

Ambient air was injected into MW-1 from August 9 to 15, 2022, for up to 12 hours per day. The air injection rate ranged from 6 to 18 cfm as shown in the table below.

Day	Injection Time	Injection Flow Rate
Day 1 (August 9, 2022)	11 hours 12 minutes	6 to 10 cfm
Day 2 (August 10, 2022)	12 hours 0 minutes	10-11 cfm
Day 3 (August 11, 2022)	12 hours 4 minutes	10 cfm
Day 4 (August 12, 2022)	11 hours 43 minutes	10-18 cfm
Day 5 (August 13, 2022)	11 hours 54 minutes	18 cfm
Day 6 (August 14, 2022)	11 hours 57 minutes	18 cfm
Day 7 (August 15, 2022)	4 hours 20 minutes	18 cfm

**Note:**

cfm = cubic feet per minute

Ambient air injection at MW-1 was allowed to cycle, or periodically rest, overnight between each day of the pilot test. Pressure and soil gas monitoring was conducted before, during, and after the bioventing pilot test in accordance with the April 2022 RWP Addendum and as shown on the table below.



Monitoring Timing or Duration	Monitoring Parameters	
	Injection Well (MW-1)	Observation Wells (MW-2 through MW-5)
Before Pilot Test and Before Commencing Injection Each Day	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.
During Injection (Every 1 to 2 Hours)	Injection pressure.  Injection velocity (converted to flow rate).	Pressure.  Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.
Following Injection Each Day	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.
Following Pilot Test	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.  Aerobic degradation monitoring.	Soil gas oxygen, carbon dioxide, carbon monoxide, methane, VOCs, hydrogen sulfide, & LEL.

**Notes:**

VOCs = Volatile organic compounds

LEL = Lower explosive limit

Injection and observation wells were purged of three casing volumes of soil gas daily prior to recording soil gas parameters

The injection and observation wells were purged of three casing volumes of soil gas daily prior to recording the soil gas parameters. A purge pump was used to remove ambient soil gas from the injection and observation well casings. Soil gas oxygen, carbon dioxide, carbon monoxide, hydrogen sulfide, and methane were measured using a GEM 5000 Landfill Gas meter calibrated with appropriate calibration gas mixtures. Lower explosive limit (LEL) was measured using a separate four-gas gas meter calibrated with an appropriate four-gas mixture. Volatile organic compounds (VOCs) were measured using a PID calibrated with isobutylene gas.

During injection at injection well MW-1, the flow velocity was measured using a Dwyer velocity meter. Wellhead pressure was measured using a Magnehelic differential pressure gauge. Daily atmospheric barometric pressure data were obtained from the National Weather Service Station in Hobbs, New Mexico, as discussed in Section 4.3.3 below.



Immediately following the pilot test, on Day 7 (i.e., August 15, 2022), the reduction in soil gas oxygen concentrations over time at injection well MW-1 were monitored to estimate aerobic degradation rates. This aerobic degradation monitoring was conducted on an hourly basis for approximately 8 hours, while additional soil gas oxygen monitoring was conducted three days after injection (i.e., on August 18, 2022).

### **4.3 Bioventing Pilot Test Monitoring Results**

Bioventing field data collected during the pilot test are summarized on Table 2. Plots depicting observation well soil gas concentrations (oxygen, carbon dioxide, and VOCs) and pressure readings over time for each day (i.e., injection cycle) of the pilot test are presented in Appendix F. Plots depicting pre- and post-injection soil gas concentrations (oxygen, carbon dioxide, and VOCs) in injection well MW-1 for each injection cycle are also presented in Appendix F. A summary of notable pilot test results is presented below for the injection and observation wells.

#### **4.3.1 Summary of Monitoring Results – Injection and Observation Wells**

##### *MW-1 – Bioventing Injection Well*

- Oxygen was measured at 13.6% prior to pilot test start-up on Day 1, which is expectedly depleted compared to atmospheric levels (20.9%), and was measured between 18.5% (slightly depleted) and 20.8% (nearly atmospheric) prior to injection start-up during Days 2 through 7.
- Carbon dioxide was measured at 1.1% prior to pilot test start-up on Day 1, which is expectedly elevated compared to atmospheric levels (<0.1%), and was measured at 0.1% prior to injection start-up during Days 2 through 7.
- VOCs were measured at 158.4 ppm prior to pilot test start-up on Day 1, which is expectedly elevated within the release area, and were measured between 47.0 and 326.7 ppm prior to injection start-up during Days 2 through 7.

##### *MW-2 – Bioventing Observation Well (located 32 feet north of MW-1)*

- The highest daily pressure recorded at MW-2 ranged from 0.20 inches of water column (WC) on Day 7 to 0.40 inches WC on Day 6. The highest daily pressures were achieved within an average of 11 hours of starting injection.
- Pre-injection oxygen levels were at or above 20% each day of the pilot test. Oxygen levels fluctuated but generally decreased during injection before rebounding at the end of each injection cycle to levels similar to or slightly below pre-injection levels. The lowest oxygen reading of 11.2% was measured on Day 6. The lowest daily oxygen readings were observed within an average of 7 hours of starting injection.
- Pre-injection carbon dioxide levels were 0.1% each day of the pilot test with the exception of Day 1 (0.6%). Carbon dioxide levels fluctuated but generally increased



during injection before decreasing at the end of each injection cycle to levels similar or slightly above pre-injection levels. There is a strong negative correlation between oxygen and carbon dioxide levels. The highest carbon dioxide reading of 7.7% was measured on Day 6. The highest daily carbon dioxide readings were observed within an average of 6 hours of starting injection.

- Pre-injection VOC levels were below 1.0 ppm each day of the pilot test with the exception of Day 3 (2.3 ppm), Day 6 (1.9 ppm) and Day 7 (2.7 ppm). VOC levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. The highest VOC reading of 21.8 ppm was measured on Day 5.

#### *MW-3 – Bioventing Observation Well (located 53 feet southwest of MW-1)*

- The highest daily pressure recorded at MW-3 ranged from 0.06 inches WC on Day 7 to 0.28 inches WC on Day 3. The highest daily pressures were achieved within an average of 6 hours of starting injection.
- Pre-injection oxygen levels were at or above 20% each day of the pilot test. Oxygen levels fluctuated but generally decreased during injection before rebounding at the end of each injection cycle to levels similar to or slightly below pre-injection levels. The lowest oxygen reading of 9.8% was measured on Day 5. The lowest daily oxygen readings were observed within an average of 6 hours of starting injection.
- Pre-injection carbon dioxide levels were at or below 0.2% each day of the pilot test with the exception of Day 4 (0.3%). Carbon dioxide levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. There is a strong negative correlation between oxygen and carbon dioxide levels. The highest carbon dioxide reading of 8.2% was measured on Day 7. The highest daily carbon dioxide readings were observed within an average of 7 hours of starting injection.
- Pre-injection VOC levels were at or below 1.0 ppm each day of the pilot test with the exception of Day 3 (2.6 ppm) and Day 4 (1.2 ppm). VOC levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. The highest VOC reading of 17.1 ppm was measured on Day 3.

#### *MW-4 – Bioventing Observation Well (located 54 feet southeast of MW-1):*

- The highest daily pressure recorded at the well ranged from 0.19 inches WC on Day 7 to 0.40 inches WC on Day 4. The highest daily pressure was achieved within an average of 7 hours of starting injection.
- Pre-injection oxygen levels were above 20% each day of the pilot test with the exception of Days 6 (19.0%) and 7 (15.8%). Oxygen levels fluctuated but generally decreased



during injection before rebounding at the end of each injection cycle to levels similar to or slightly below pre-injection levels. The lowest oxygen reading of 15.7% was measured on Day 6. The lowest daily oxygen readings were observed within an average of 7 hours of starting injection.

- Pre-injection carbon dioxide levels were at or below 0.2% each day of the pilot test. Carbon dioxide levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. There is a strong negative correlation between oxygen and carbon dioxide levels. The highest carbon dioxide reading of 3.7% was measured on Day 6. The highest daily carbon dioxide readings were observed within an average of 7 hours of starting injection.
- Pre-injection VOC levels were at or below 1.0 ppm each day of the pilot test. VOC levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. The highest VOC reading of 18 ppm was measured on Day 5.

*MW-5 – Bioventing Observation Well (located 90 feet north-northwest of MW-1):*

- The highest daily pressure recorded at the well ranged from 0.01 inches WC on Day 7 to 0.58 inches WC on Day 4. The highest daily pressure was achieved within an average of 11 hours of starting injection.
- Pre-injection oxygen levels were above 20% each day of the pilot test. Oxygen levels fluctuated but generally decreased during injection before rebounding at the end of each injection cycle to levels similar to or slightly below pre-injection levels. The lowest oxygen reading of 13.2% was measured on Day 4. The lowest daily oxygen readings were observed within an average of 6 hours of starting injection.
- Pre-injection carbon dioxide levels were at or below 0.2% each day of the pilot test. Carbon dioxide levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. There is a strong negative correlation between oxygen and carbon dioxide levels. The highest carbon dioxide reading of 2.1% was measured on Day 2. The highest daily carbon dioxide readings were observed within an average of 6 hours of starting injection.
- Pre-injection VOC levels were at or below 1.0 ppm each day of the pilot test. VOC levels fluctuated but generally increased during injection before decreasing at the end of each injection cycle to levels similar to or slightly above pre-injection levels. The highest VOC reading of 4.6 ppm was measured on Day 5.

Significant changes to soil gas carbon monoxide, methane, LEL, and hydrogen sulfide levels were not observed during or following the pilot test. Thus, these parameters are not discussed above or shown on the plots presented in Appendix F.



The effective injection ROI; air propagation through the subsurface; atmospheric barometric pressure and its potential effect on subsurface pressure readings; and in-situ respirometry test results are discussed below.

#### 4.3.2 Effective Injection ROI

The effective injection ROI was determined by evaluating pressure readings at the observation wells (MW-2 through MW-5). Although there is little technical guidance regarding the definition of effective injection ROI specific to bioventing, references for soil vapor extraction indicate that the effective ROI is defined at a vacuum of >0.1 inches WC (Bass, 1993, Southersan, 1999, USACE, 2002). By inference, the effective ROI for bioventing is therefore defined at a pressure of >0.1 inches WC.

Pressures of greater than 0.20 inches WC were observed at all four observation wells during the seven-day pilot test. A summary of the average maximum daily pressure recorded at each observation well is shown on the table below. As shown, the highest average maximum daily pressure (0.32 inches WC) was observed at observation well MW-2, which is located nearest to injection well MW-1.

Observation Well	Distance and Direction from Injection Well MW-1	Average Maximum Daily Pressure Reading (inches WC)	Maximum Pressure Reading (inches WC) and Day of Reading
MW-2	32 feet north	0.32	0.40 on Day 6
MW-3	53 feet southwest	0.18	0.28 on Day 3
MW-4	54 feet southeast	0.28	0.40 on Day 4
MW-5	90 feet north-northwest	0.30	0.58 on Day 4

Based on the pressures observed at the four observation wells and their distance from injection well MW-1, the effective ROI for bioventing is at least 90 feet, which is the distance between injection well MW-1 and observation well MW-5. The pressure readings were corroborated using soil gas oxygen and carbon dioxide measurements, since these soil gas parameters were affected by bioventing during the pilot test, as discussed in Section 4.3.3 below.

#### 4.3.3 Air Propagation Through the Subsurface

Soil gas levels (notably oxygen, carbon dioxide, and VOCs) are key parameters to demonstrate bioventing effectiveness through air propagation and to confirm the effective injection ROI indicated by observation well pressures. Air propagation is demonstrated by monitoring for aerobic biodegradation of hydrocarbons present in soil, which may be indicated by a decrease in oxygen levels and a corresponding increase in carbon dioxide levels in subsurface soil gas within the release area due to respiration of bacteria necessary for biodegradation of the hydrocarbons. Air propagation is also demonstrated by monitoring for VOC levels in soil, which



may be indicated by increased hydrocarbon concentrations due to volatilization in the vadose zone within the release area. Bioventing facilitates and accelerates bioremediation by further aerating subsurface soils with ambient air, which has a high oxygen content, and potentially increases volatilization of hydrocarbons.

As discussed in the November 2021 SCR & RWP, a column of TPH-affected soil extends vertically from the surface (surface soil was removed to a depth of 4.5 feet bgs in August 2022, as documented in Section 3.0) to the capillary fringe in the immediate vicinity of the release point (i.e., the release area). As shown on Figure 2, well MW-1 is located within the full column of TPH-affected soil (the upper 4.5 feet bgs of soil were excavated). Observation well MW-2 is located within the area with TPH-affected soil below 4 feet bgs, while observation wells MW-3, MW-4, and MW-5 are located outside of the area with TPH-affected soil.

Active biodegradation in the release area was confirmed by pre-injection soil gas readings at injection well MW-1, which indicated the presence of depleted oxygen levels (13.6%) and increased carbon dioxide levels (1.1%) relative to atmospheric levels (20.9% and <0.1%, respectively) and elevated VOC levels (158.4 ppm) immediately before commencing the seven-day pilot test. Slightly depleted oxygen levels were also generally observed at injection well MW-1 before injection during each daily pilot test injection cycle. In contrast, pre-injection soil gas readings at each of the four observation wells (MW-2 through MW-5) for oxygen and carbon dioxide were observed to be close to atmospheric levels (20.9% and <0.1%, respectively) and pre-injection soil gas readings of VOCs were observed to be absent (<1 ppm), as expected.

During the pilot test, a strong inverse correlation between oxygen and carbon dioxide levels was observed at the observation wells. Though less pronounced, an inverse correlation between oxygen and VOC levels was also observed at the observation wells. Oxygen levels were observed to decrease while carbon dioxide and VOC levels were observed to increase (typically within 4 hours after injection initiation each day) at the observation wells during injection before returning to pre-injection conditions (relatively high oxygen and low carbon dioxide and VOC levels) at the end of each injection cycle. These observations and measurements indicate that during the early portion of the pilot test the injection of ambient air at well MW-1 “pushed” vadose zone soil gas with depleted oxygen and elevated carbon dioxide and VOC levels from MW-1 (release area) outward toward the observation wells. During the latter part of each daily injection cycle, the second wave front of high oxygen and low carbon dioxide and VOC levels observed at the observation wells was representative of propagation of the injected ambient air. Carbon dioxide is a byproduct of biodegradation and accumulates at the release area, while VOCs also accumulate due to volatilization of hydrocarbons in the release area. As shown on the plots included in Appendix F, the increased pressure readings and changes in oxygen, carbon dioxide, and VOC levels observed at the observation wells during injection are the result of bioventing and the propagation of injected air through the subsurface.

As shown in the cross sections in Figures 6 and 7, the lithology immediately beneath the Site consists primarily of interbedded sands, clays, and caliche. A layer of fine sand, clayey sand, to



sandy clay is present from approximately 18 to 40 feet bgs, which includes the lower portion of the vadose zone, capillary fringe, and saturated zone. As discussed above, the bioventing results indicate that ambient air propagated laterally more than 90 feet through the sandy layer in the vadose zone. Thus, the Site lithology is well suited to bioventing.

The observed changes in pressure and soil gas oxygen, carbon dioxide, and VOC levels indicate injected air with a high oxygen content propagated through the subsurface to potentially volatilize hydrocarbons and promote populations of aerobic bacteria to aerobically degrade hydrocarbons present in soil.

#### **4.3.4 Atmospheric Barometric Pressure and Potential Effect on Subsurface Pressure Readings**

Atmospheric barometric pressure potentially can affect subsurface pressure measurements, though the effect is typically minimal. Academic studies have shown that gas flow in unsaturated soil can be induced naturally by the daily fluctuation of atmospheric barometric pressure (EPRI, 2005, and Abas et al, 2010). Oscillations in atmospheric barometric pressure are common and consist of both diurnal oscillations, with correspond to daily heating and cooling of the atmosphere, and oscillations that result from the passage of cold and warm weather fronts. Normal diurnal variations can average up to 4 to 5 millibars (mbar) while those due to weather front passage can be 25 mbar or more (EPRI, 2005, and Abas et al, 2010). Other studies have defined a significant or very sharp atmospheric pressure change as greater than 8 mbar over 3 hours (Cl:aire Technical Bulletin, 2018).

For the pilot test, daily atmospheric barometric pressure data were obtained from the National Weather Service Station in Hobbs, New Mexico, located approximately 12 miles northeast of the Site. These diurnal data are presented on the plots in Appendix F, with daily atmospheric pressure fluctuations plotted on a secondary Y axis and the pressure readings for the four observation wells plotted on the primary Y axis. Overall, daily fluctuations in atmospheric pressure varied from 1.35 to 4.74 mbar (0.54 to 1.9 inches WC), which is typical of average daily barometric pressure fluctuations rather than more significant fluctuations associated with the passage of a weather front. As shown on the plots presented in Appendix F, the pressure readings observed at the observation wells during the pilot test do not show a correlation to the diurnal atmospheric barometric pressure changes observed during the same time period.

Abbas et al (2010) showed that the primary penetration depth of the vadose zone for normal diurnal atmospheric pressure variances may range from approximately 0.16 to 3 feet bgs. A second zone of atmospheric pressure effect is called the "oscillation zone" in which the air oscillates around its original position but remains in the soil. As discussed by Abbas et al (2010), air displacement observed in the oscillation zone may range from 1 foot to a maximum depth of 33 feet bgs. There is only a slight overlap between the maximum potential oscillation zone depth of 33 feet bgs and the bioventing pilot test depth interval, as injection well MW-1 and observation wells MW-2 through MW-5 are screened from 30 to 50 feet bgs (and groundwater is present at an approximate depth of 38 feet bgs). Thus, the potential impact from diurnal



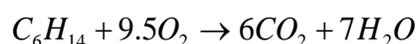
fluctuations in atmospheric pressure observed over the pilot test is considered insignificant and is not likely to have affected the pilot test results.

#### 4.3.5 In-Situ Respirometry Test Results and Hydrocarbon Degradation Rates

Aerobic degradation monitoring, or in-situ respirometry testing, was conducted at bioventing injection well MW-1 based upon the approach developed for the U.S. Air Force in the *Test Plan and Technical Protocol for a Field Treatability Test for Bioventing* (AFCEE, 1992) as well as *Technology Overview, Evaluating Natural Source Zone Depletion* (ITRC, 2009). The in-situ respirometry testing was conducted immediately following cessation of injection on Day 7 (i.e., August 15, 2022) on an hourly basis for approximately 8 hours and then three days after injection (i.e., on August 18, 2022). The soil gas oxygen level in MW-1 after completion of the injection portion of the pilot test decreased from 20.5% at 18:50 on August 15, 2022, to 18.4% at 10:55 on August 18, 2022 (i.e., 64 hours). This corresponds to an oxygen utilization of 0.79% per day.

It should be noted that on August 18, 2022, the soil gas oxygen level was measured at 10:17 after purging three casing volumes of soil gas from well MW-1. The reading was unexpectedly high (20.6%) and was considered anomalous; it is possible an insufficient volume of soil gas was purged from the well to allow for a representative measurement of the soil gas oxygen levels. Thus, a second soil gas oxygen level was measured at 10:55 after purging an additional three casing volumes of soil gas from well MW-1. This second measurement (18.4%) was utilized for the oxygen utilization calculations, as referenced above. Both soil gas oxygen levels measured on August 18, 2022, are shown on Table 2.

The hydrocarbon biodegradation rate was estimated from oxygen uptake versus time, using a stoichiometric relationship for the oxidation of hydrocarbons. When hexane is used as the representative hydrocarbon, the stoichiometric relationship becomes:



Based upon the oxygen utilization rate, or the change in oxygen concentration per day, the biodegradation rate in terms of milligrams (mg) of hexane-equivalent degraded per kilogram (kg) of soil per day was estimated using the following equation:

$$K_B = -\frac{K_O A D_O C}{100}$$

where:

- $K_B$  = biodegradation rate (mg/kg day)
- $K_O$  = oxygen uptake rate (percent per day)
- $A$  = volume of air/kg soil (L/kg)
- $D_O$  = density of oxygen gas (mg/L)



$C = \text{mass ratio of hydrocarbon to oxygen}$

The density of oxygen,  $D_o$ , is approximately 1,330 milligrams per liter (mg/L), but it varies with temperature, altitude, and atmospheric pressure. The mass ratio of hydrocarbon to oxygen is 1/3.5 from the above equation for hexane. In other words, it takes 3.5 pounds of oxygen to degrade one pound of hydrocarbons.

The oxygen utilization in the unsaturated zone can be correlated to the rate of hydrocarbon degradation using equations, stoichiometric factors, and diffusion coefficients published by ITRC (2009). The results for the unsaturated zone at the Site were based on oxygen flux through the unsaturated zone at MW-1 and are provided in Table 3. The oxygen utilization of 0.79% per day results in a hydrocarbon degradation rate of 0.90 mg of hydrocarbons per kilogram (kg) of soil per day. This rate of hydrocarbon degradation equates to a normalized degradation of 125 gallons of hydrocarbons degraded per acre per year. This normalized rate for the Site is within the published range of hydrocarbon degradation rates from other petroleum-contaminated sites across the United States which ranges from 100 to 1,700 gallons of hydrocarbon per acre per year (Newell et al. 2016). This indicates bioventing is a feasible remediation technology for the Site.

#### 4.4 Bioventing Pilot Test Conclusions and Recommendations

The following conclusions are based on the results of the seven-day bioventing pilot test:

- Pre-pilot test biodegradation of hydrocarbons in the release area was indicated by pre-injection soil gas readings at injection well MW-1, which indicated the presence of depleted oxygen levels and increased carbon dioxide levels relative to atmospheric levels immediately before commencing the pilot test. Depleted oxygen levels were also observed at injection well MW-1 before injection during each day of the pilot test.
- Pressure readings of at least 0.20 inches WC were observed at all four observation wells during the pilot test. Based on the distance from injection well MW-1 to the farthest observation well (MW-5), located 90 feet from MW-1, the effective ROI for bioventing is at least 90 feet. The potential impact from diurnal fluctuations in atmospheric pressure is considered insignificant and is not likely to have affected the pilot test results.
- Soil gas oxygen, carbon dioxide, and VOC levels were observed to fluctuate at all four observation wells during the pilot test. Evaluation of the soil gas fluctuations at the observation wells indicated that the injection of ambient air at well MW-1 during the pilot test “pushed” vadose zone soil gas from MW-1, located in the release area, outward toward the observation wells. This effect was observed each day of the pilot test at the four observation wells in the form of initial high oxygen/low carbon dioxide levels, then the wave front of low oxygen/high carbon dioxide levels from the injection area, and finally a return to high oxygen/low carbon dioxide levels from the injection area by the end of each day. VOC levels were also observed to increase slightly during injection before returning to pre-injection conditions at the end of each injection cycle.



- The bioventing results indicate that oxygenated ambient air was able to propagate laterally at least 90 feet through the sandy layer in the vadose zone. Thus, the Site lithology is well suited to bioventing.
- The aerobic degradation rate was determined to be 0.90 mg of hydrocarbons per kg of soil per day. This rate of hydrocarbon degradation equates to a normalized degradation of 125 gallons of hydrocarbons degraded per acre per year, which indicates bioventing is a feasible remediation technology for the Site.

Based on the pilot test results, bioventing was determined to be an effective remedial technology for promoting biodegradation of and reducing TPH concentrations in vadose zone soil at the Site. The proposed design and implementation details for a full-scale bioventing system is discussed in Section 5.0 below.

## **5.0 FULL-SCALE BIOVENTING DESIGN AND OPERATIONS AND MAINTENANCE**

The objective of full-scale bioventing at the Site is to reduce TPH concentrations in subsurface, vadose zone soil. The following critical design and operation criteria for the full-scale bioventing system are based on the seven-day bioventing pilot test results:

- Use of an air compressor capable of achieving and sustaining 10 to 20 cfm at 6 PSI at each injection well screen interval (i.e., injection point).
- Use of a receiver tank to decrease compressor cycling to below 25% and increase the longevity of the compressor.
- Injection well placement based on an injection ROI of 90 feet. As a conservative measure, additional injection wells will be installed in the release area to ensure sufficient injection of oxygenated ambient air into TPH-affected vadose zone soils.
- Use of nested injection wells in the release area to target discrete vadose zone soil depths within the column of TPH-affected soil that extends vertically from 4.5 feet bgs to the capillary fringe.
- Cycling of ambient air injection to increase the effectiveness of bioventing. Injection cycling helps to eliminate stagnation zones, promotes varying soil gas pressure and chemistry changes that increase bioavailability of oxygen to soil bacteria, and allows the hydrocarbon mass to re-enter permeable pathways.

Based on the extent of TPH-affected soil shown on Figures 6 through 8, it is estimated that approximately 3,000 cubic yards of TPH-affected vadose zone soil remain at the Site. The following sections summarize the proposed full-scale bioventing system design, operational schedule and timeframe, procedures for system operations and maintenance (O&M), performance monitoring, and confirmation sampling.



## 5.1 System Design and Components

The full-scale bioventing system will consist of the following components:

- One skid-mounted air compressor capable of providing a total of 60 cfm at 125 PSI. The compressor will be housed in a shed and connected to an 80-gallon receiver tank using aboveground 1-inch Schedule 80 PVC piping. The receiver tank will also be located within the compressor shed.
- Three nested (BV-1 through BV-3) and one non-nested (BV-4) bioventing injection wells to be located throughout the extent of TPH-affected soil. The injection screen points will be installed in the vadose zone and will not extend deeper than 39 feet bgs.
- One 80-gallon receiver tank to be connected to the bioventing injection wells using 1-inch Schedule 80 PVC piping and flexible piping.
- Electrical power to be supplied by a solar- or propane-powered generator, or direct electrical connection via a power drop. HEP will work with the landowner to ensure that the power method for the system is appropriate.
- Solenoids and timers to allow pulsing and cycling of ambient air injection between the four bioventing wells and/or select screen intervals of the nested injection wells.
- Control valves, flow indicators, and pressure indicators to be placed between the receiver tank and each well/injection interval to monitor injection flow rate and pressure during bioventing operations.

As shown on the cross sections presented on Figures 6 and 7, the bioventing injection points are proposed to treat vadose zone soil intervals with TPH concentrations above the Closure Criterion. Nested injection wells BV-1, BV-2, and BV-3 are proposed near the release area. The nested screen intervals will include shallow (anticipated from 4 to 14 feet bgs), middle (anticipated from 17 to 29 feet bgs), and deep (anticipated from 32 to 39 feet bgs) injection points to target the entire vadose zone soil column beneath 4.5 feet bgs. Non-nested injection well BV-4 is proposed east of the release area; the screen interval will be installed with only a deep (anticipated from 29 to 39 feet bgs) injection point to target the capillary fringe. Additional installation details of the bioventing injection wells are presented below.

Existing monitoring wells MW-1 through MW-5 will be used as observation wells during operation of the bioventing system.

The proposed layout of the full-scale bioventing system at the Site, including the locations of the bioventing injection wells, compressor shed system piping, and observation wells, is shown on Figure 8. A piping and instrumentation diagram for the proposed full-scale system is proposed on Figure 9.



A drill rig will be used to install the bioventing injection wells. The wells will be installed as follows:

- Three nested bioventing injection wells (BV-1, BV-2, and BV-3) will be installed within 10-inch diameter boreholes. The screen intervals for each nested well are anticipated to be 4 to 14 feet bgs, 17 to 29 feet bgs, and 32 to 39 feet bgs. The nested injection wells will be constructed of 2-inch diameter Schedule 40 PVC casing and 0.020-inch slotted screen; 10-20 grade silica sand will be used and will extend at least 0.5 feet above and below each screen interval. At least 2-feet of hydrated bentonite will be installed between each screen interval and above the shallowest screen interval.
- One non-nested 2-inch diameter bioventing injection well (BV-4) will be installed east of the release area within an 8-inch diameter borehole. The screen interval for the non-nested well is anticipated to be 29 to 39 feet bgs. The non-nested injection well will be constructed of 2-inch diameter Schedule 40 PVC casing and 0.020-inch slotted screen; 10-20 grade silica sand will be used and will extend at least 0.5 feet above the screen interval. At least 2-feet of hydrated bentonite will be installed above the screen interval.
- All wells will be completed at grade with a protective traffic-rated well vault and surveyed for elevation and coordinates by a New Mexico licensed professional land surveyor.

The final injection well screen intervals may be adjusted to bias more permeable and TPH-impacted zones pending the lithology and PID screening data observed at each proposed bioventing injection well location. The proposed bioventing well construction details are shown on Figures 10 and 11.

An updated C-141 Form is provided in Appendix G for NMOCD's review and approval. The NMOCD Form C-108 Application for Authorization to Inject and EPA Underground Discharge System (Class V) Inventory Sheet for the bioventing pilot test are attached in Appendices H and I, respectively; these forms are updated from those submitted with the April 2022 RWP Addendum to include the full-scale system.

## **5.2 System O&M, Operational Timeframe, and Performance Monitoring**

Bioventing injection will be conducted at up to three injection points simultaneously for 8 to 12 hours and then cycled to other injection points. Injection may be conducted at multiple injection points at one well or at targeted injection point depths across multiple nested wells simultaneously (e.g., the shallow injection points) for 8 to 12 hours and then cycled to other targeted injection point depths. As discussed above, cycling helps to eliminate stagnation zones, promotes varying soil gas pressure and chemistry changes that increase bioavailability of oxygen to soil bacteria, and allows the hydrocarbon mass to re-enter permeable pathways.

Injection will be conducted at 10 to 20 cfm per injection point. The cumulative injection capacity of the system will be 60 cfm. The system will operate continuously and will cycle between injection wells/points using solenoids and timers installed on the injection piping.



The primary performance measures for the full-scale bioventing system include the following:

- Injection flow rate of 10 to 20 cfm at injection wells BV-1 through BV-4.
- Elevated pressure readings (>0.1 inches WC) at observation wells MW-1 through MW-5 and injection wells BV-1 through BV-4 (when bioventing injection is inactive at the injection point during cycling to other injection points) during injection.
- At or near atmospheric oxygen (20.9%) and carbon dioxide (<0.1%) levels, and low VOC (<1 ppm) levels at injection wells BV-1 through BV-4 and observation wells MW-1 through MW-5 during injection.
- Decreasing aerobic degradation rates over time at injection wells BV-1 through BV-4.

O&M of the full-scale system will be conducted weekly for the first 2 to 3 weeks following system start-up and then monthly thereafter. Upon arrival during each O&M event, monitoring of select parameters will be conducted before temporary shut-down of injection activities. Injection will be restarted at the end of each O&M event. A summary of performance monitoring is provided in the table below.

Monitoring Parameter	Monitoring/ Measurement Point	Monitoring/ Measurement Method	Monitoring/ Measurement Frequency
Soil gas levels (oxygen, carbon dioxide, & VOCs)	Injection points Observation wells	GEM 5000 landfill gas meter & PID	Monthly
Injection Flow Velocity/Rate	Injection points (when injection ongoing)	Dwyer air velocity meter	Monthly
Injection Pressure	Injection points (when injection ongoing)	Magnehelic differential pressure gauges	Monthly
Wellhead pressure	Observation wells	Magnehelic differential pressure gauges	Monthly
Aerobic degradation rate via in-situ respirometry test (soil gas oxygen)	Injection points (when injection temporarily shut down)	GEM 5000 landfill gas meter	Monthly to every other month (measurements taken hourly for 8 to 12 hours)

**Notes:**

VOCs = Volatile organic compounds

PID = Photo-ionization detector

All parameters shown in this table will be monitored weekly for the first 2 to 3 weeks following system start-up



In-situ respirometry testing will be conducted to determine the hydrocarbon degradation rate at each injection point during routine O&M visits in accordance with the approach developed for the U.S. Air Force in the *Test Plan and Technical Protocol for a Field Treatability Test for Bioventing* (AFCEE, 1992) as well as *Technology Overview, Evaluating Natural Source Zone Depletion* (ITRC, 2009). Hydrocarbon degradation rates will be used to determine the effectiveness of the bioventing system to promote biodegradation and reduce TPH concentrations in soil. The hydrocarbon degradation rate trend at each injection point will be evaluated to determine if the rate of hydrocarbon degradation is decreasing or becomes asymptotic. Specific injection points may be deactivated based on decreasing or asymptotic hydrocarbon degradation rates and trends so that injection can be focused on other injection points, as appropriate.

It is anticipated that the full-scale bioventing system will be operated for at least one year pending performance measurement data. Operation of the full-scale bioventing system may be extended beyond one year if needed based on the performance measurement data and/or confirmation sampling results (see below).

System O&M and performance monitoring data will be documented in annual reports, which will be prepared and submitted to NMOCD within 120 days of the end of each calendar year during which system O&M and/or groundwater monitoring occurs.

### **5.3 Confirmation Sampling**

As discussed above, the objective of full-scale bioventing at the Site is to reduce TPH concentrations in subsurface, vadose zone soil. After implementation of the full-scale bioventing system (e.g., one year) and based on the performance measurement data, confirmation soil borings will be drilled throughout the extent of TPH-affected soil for collection of soil samples for laboratory analysis of TPH. The soil boring locations will be co-located with previous soil borings that have pre-bioventing TPH concentrations above the Closure Criterion. If TPH concentrations in soil remain above the Closure Criterion following implementation of the bioventing system (i.e., one year), then operation of the bioventing system may be continued by targeting specific injection points or alternate remedial technologies may be considered.

In accordance with the April 2022 RWP Addendum, quarterly groundwater monitoring of wells MW-1 through MW-5 will be conducted as a conservative measure to monitor groundwater quality during implementation of the soil remedies, including the full-scale bioventing system. Existing monitoring wells MW-1 through MW-5 will be gauged for depth to light non-aqueous phase liquid (LNAPL), if present, and groundwater, and sampled using low flow methodology for laboratory analysis of TPH. Quarterly groundwater monitoring commenced on August 16, 2022, immediately following the bioventing pilot test and before the surface soil excavation activities. Groundwater assessment results to-date indicate groundwater beneath the Site has not been affected by the 2018 HEP release.



#### **5.4 Implementation Schedule**

The full-scale bioventing system will be installed and activated within 120 days of NMOCD approval of this Report, the NMOCD Form C-108 Application for Authorization to Inject, and the EPA Underground Discharge System (Class V) Inventory Sheet.

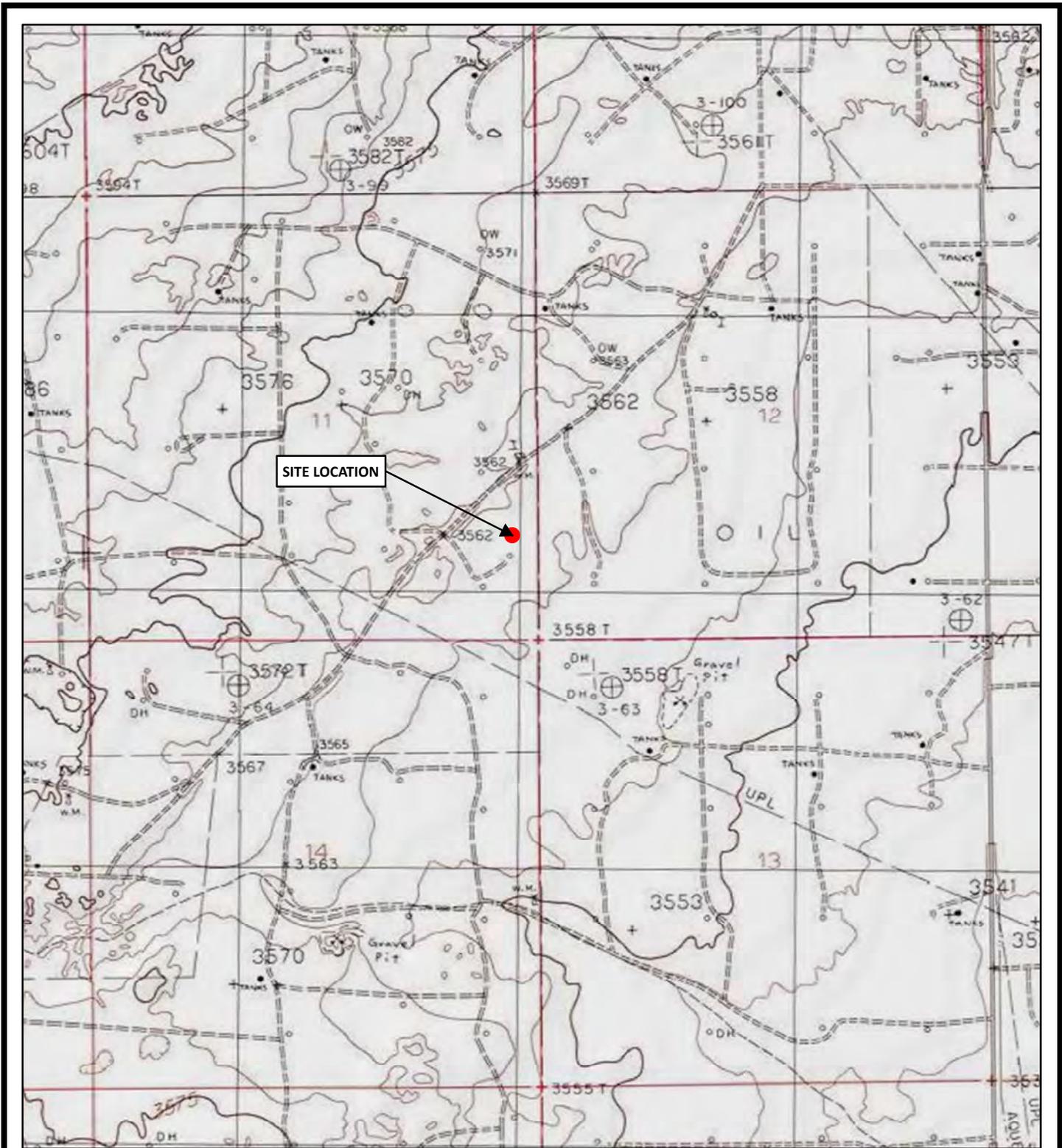
The annual reports will be prepared and submitted to NMOCD within 120 days of the end of each calendar year during which system O&M and/or groundwater monitoring occurs.



## 6.0 DISTRIBUTION

- Copy 1: Mike Bratcher  
Incident Supervisor  
Environmental Bureau  
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Conservation Division  
811 S. First Street  
Artesia, NM 88210
- Copy 2: L&K Ranch LLC  
P.O. Box 1503  
Hobbs, NM 88241
- Copy 3: Melanie Nolan  
HEP  
1602 W. Main Street  
Artesia, New Mexico, 88210
- Copy 4: Arsin Sahba, P.G.  
HF Sinclair  
2828 N. Harwood Street, Suite 1300  
Dallas, TX 75201

**FIGURES**



BASE MAP FROM USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE SERIES - MONUMENT SOUTH, NEW MEXICO (32103-E3)



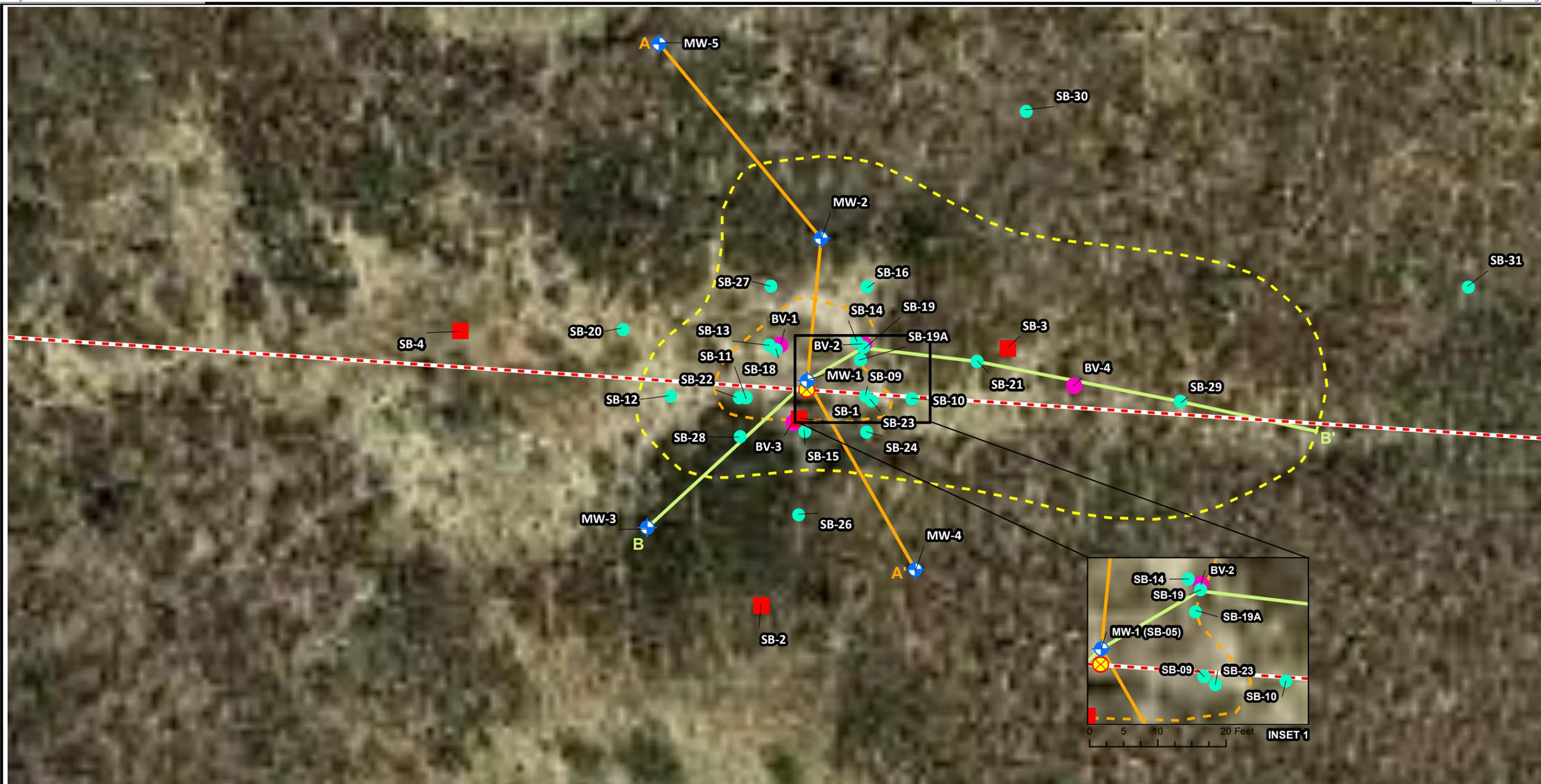
 505 EAST HUNTLAND DRIVE SUITE #250 AUSTIN, TX 78752 PHONE: 512.329.6080 TRC - GIS	PROJECT:	HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	DRAWN BY:	M.JAGOE
	TITLE:	SITE LOCATION MAP	CHECKED BY:	RDV
			APPROVED BY:	S. HOOVER
			DATE:	September 2022
			PROJ. NO.:	426140
			FILE:	497744_1_Site Location Map.mxd
			<b>FIGURE 1</b>	

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TRC - GIS

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Map Rotation: 0

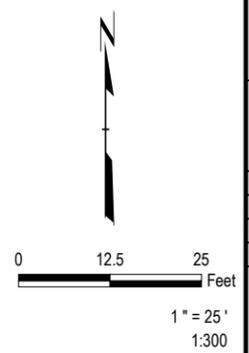
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SOURCE: AERIAL IMAGERY - GOOGLE AND THEIR DATA PARTNERS (11/2/2017)

- LEGEND**
- GHD SOIL BORING LOCATION
  - ⊕ MONITORING WELL LOCATION
  - TRC SOIL BORING LOCATION
  - - - 6" GATHERING LINE
  - ⊗ RELEASE LOCATION
  - - - EXTENT OF SURFACE SOIL (0-4 FEET BGS) WITH TPH AND/OR CHLORIDE CONCENTRATION ABOVE SITE CLOSURE CRITERIA (BEFORE AUGUST 2022 EXCAVATION)
  - - - EXTENT OF SOIL BENEATH 4 FEET BGS WITH TPH AND/OR CHLORIDE CONCENTRATION ABOVE SITE CLOSURE CRITERIA
  - CROSS SECTION A-A' LOCATION LINE
  - CROSS SECTION B-B' LOCATION LINE
  - PROPOSED BIOVENTING WELL LOCATION (SEE FIGURE 8)

- NOTES:**
1. GHD SOIL SAMPLES (SB-1 THROUGH SB-4) COLLECTED ON 9/28/2018.
  2. TRC SOIL SAMPLES (SB-05 THROUGH SB-16) COLLECTED ON 11/3-6/2020.
  3. TRC SOIL SAMPLES (SB-18 THROUGH SB-28) COLLECTED ON 5/24-28/2021.
  4. SB-17 INADVERTENTLY SKIPPED.
  5. TRC SOIL SAMPLES FROM SB-29 THROUGH SB-31 COLLECTED ON OCTOBER 5-7, 2021.
  6. TRC SOIL SAMPLES FROM SB-19A COLLECTED ON AUGUST 15, 2022.

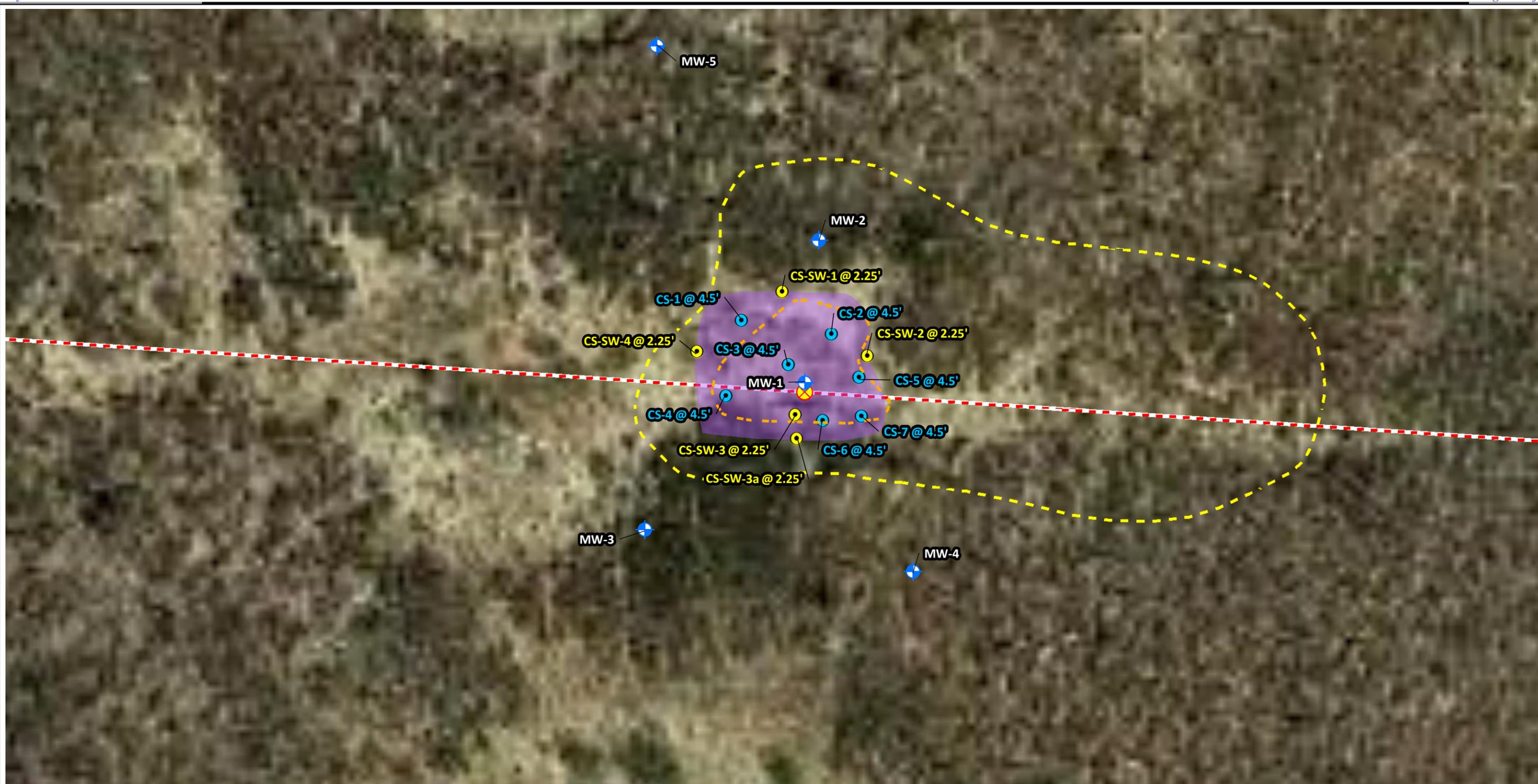


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TITLE:		<b>BORING, WELL, AND CROSS SECTION LOCATION MAP</b>	
DRAWN BY:	M. JAGOE	PROJ NO.:	497744
CHECKED BY:		<b>FIGURE 2</b>	
APPROVED BY:			
DATE:	OCTOBER 2022		
		505 EAST HUNTLAND DRIVE, SUITE 250 AUSTIN, TX 78752 PHONE: 512.329.6080 WWW.TRCSOLUTIONS.COM	
FILE NO.:	497744_2_NEW.MXD		

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 F1US (Foot US)  
Map Rotation:

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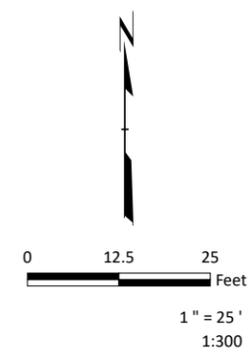


SOURCE: AERIAL IMAGERY - GOOGLE AND THEIR DATA PARTNERS (11/2/2017)

- LEGEND**
- MONITORING WELL LOCATION
  - CONFIRMATION SIDEWALL SAMPLE
  - CONFIRMATION BOTTOM SAMPLE
  - RELEASE
  - AREA EXCAVATED TO 4.5 FEET BGS

- PROPOSED EXCAVATION AREA TO DEPTH OF 4.5 FEET BGS
- 6" GATHERING LINE
- EXTENT OF SOIL BENEATH 4 FEET BGS WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA

**NOTES:**  
 CS: BOTTOM CONFIRMATION SAMPLE  
 CS-SW: SIDEWALL CONFIRMATION SAMPLE  
 BGS: BELOW GROUND SURFACE

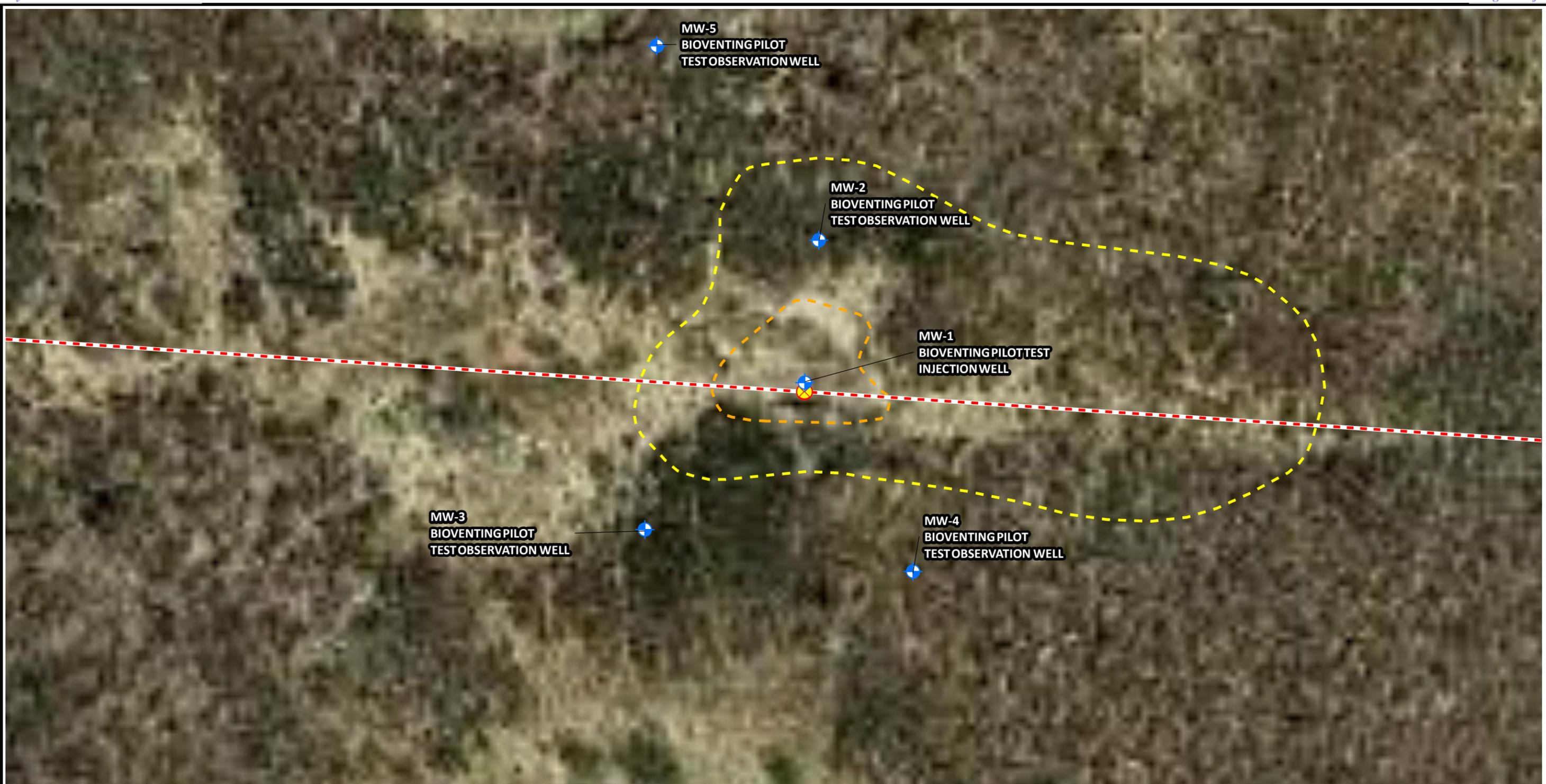


PROJECT:		<b>HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE</b>	
TITLE:		<b>EXCAVATION AND CONFIRMATION SAMPLE LOCATION MAP</b>	
DRAWN BY:	M. JAGOE	PROJ NO.:	497744
CHECKED BY:		<b>FIGURE 3</b>	
APPROVED BY:			
DATE:	OCTOBER 2022		
		505 EAST HUNTLAND DRIVE, SUITE 250 AUSTIN, TX 78752 PHONE: 512.329.6080 WWW.TRCSOLUTIONS.COM	
FILE NO.:	497744_3.mxd		

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 FUS (Foot US)  
Map Rotation: 0

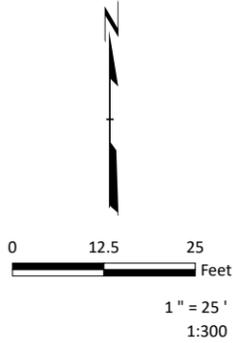
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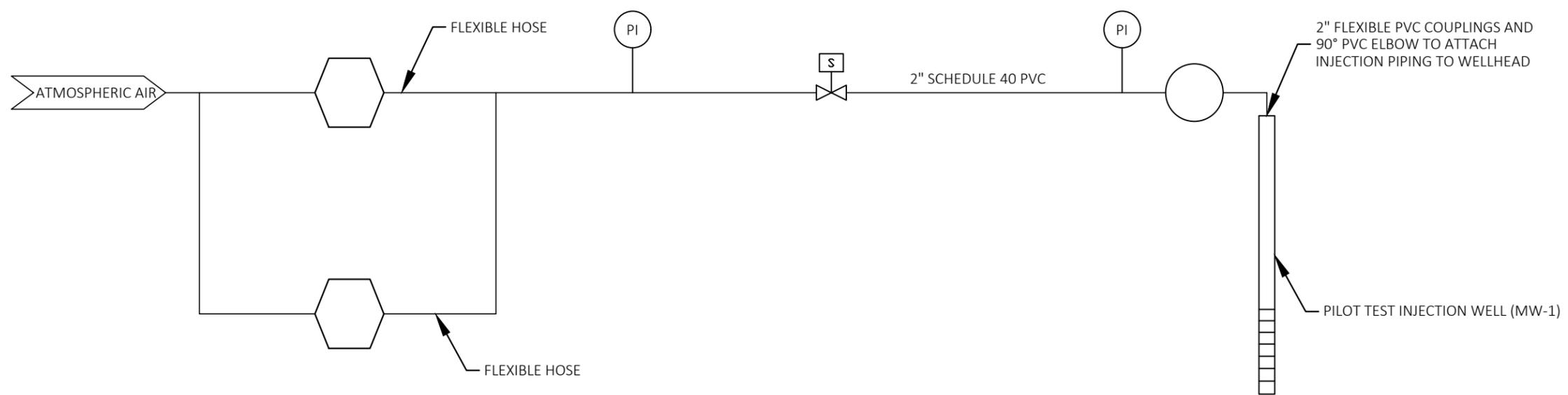
- LEGEND**
- OBSERVATION WELL/INJECTION WELL
  - 6" GATHERING LINE
  - RELEASE LOCATION
  - FORMER EXTENT OF SURFACE SOIL (0-4 FEET BGS) WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA (NOTE 1)
  - EXTENT OF SOIL BENEATH 4 FEET BGS WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA

SOURCE: AERIAL IMAGERY - GOOGLE AND THEIR DATA PARTNERS (11/2/2017)

**NOTE:**  
 1. EXCAVATION OF SURFACE SOIL WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA CONDUCTED TO DEPTH OF 4.5 FEET IN AUGUST 2022.



PROJECT:		<b>HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE</b>	
TITLE:		<b>BIOVENTING PILOT TEST INJECTION AND OBSERVATION WELL LOCATION MAP</b>	
DRAWN BY:	M. JAGOE	PROJ NO.:	497744
CHECKED BY:		<b>FIGURE 4</b>	
APPROVED BY:			
DATE:	OCTOBER 2022		
		505 EAST HUNTLAND DRIVE, SUITE 250 AUSTIN, TX 78752 PHONE: 512.329.6080 WWW.TRCOLUTIONS.COM	
FILE NO.:	497744_4_NEW.mxd		



SYMBOLS	
	1-HP COMPRESSOR
	PRESSURE INDICATOR
	FLOW REGULATOR
	VELOCITY METER AND SAMPLE PORT

PROJECT:		HOLLY ENERGY PARTNERS - OPERATING L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE:		BIOVENTING PILOT TEST PROCESS FLOW DIAGRAM	
DRAWN BY:	TMAURUS	PROJ NO.:	497774
CHECKED BY:	DHELBERT	<b>FIGURE 5</b>	
APPROVED BY:	DHELBERT		
DATE:	09/12/2022		
		505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
		FILE NO.:	BIOVENT PROCESS FLOW.dwg

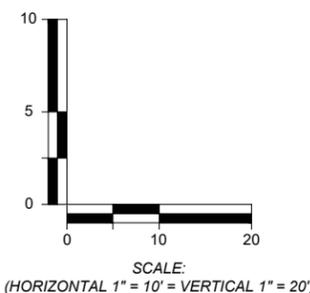
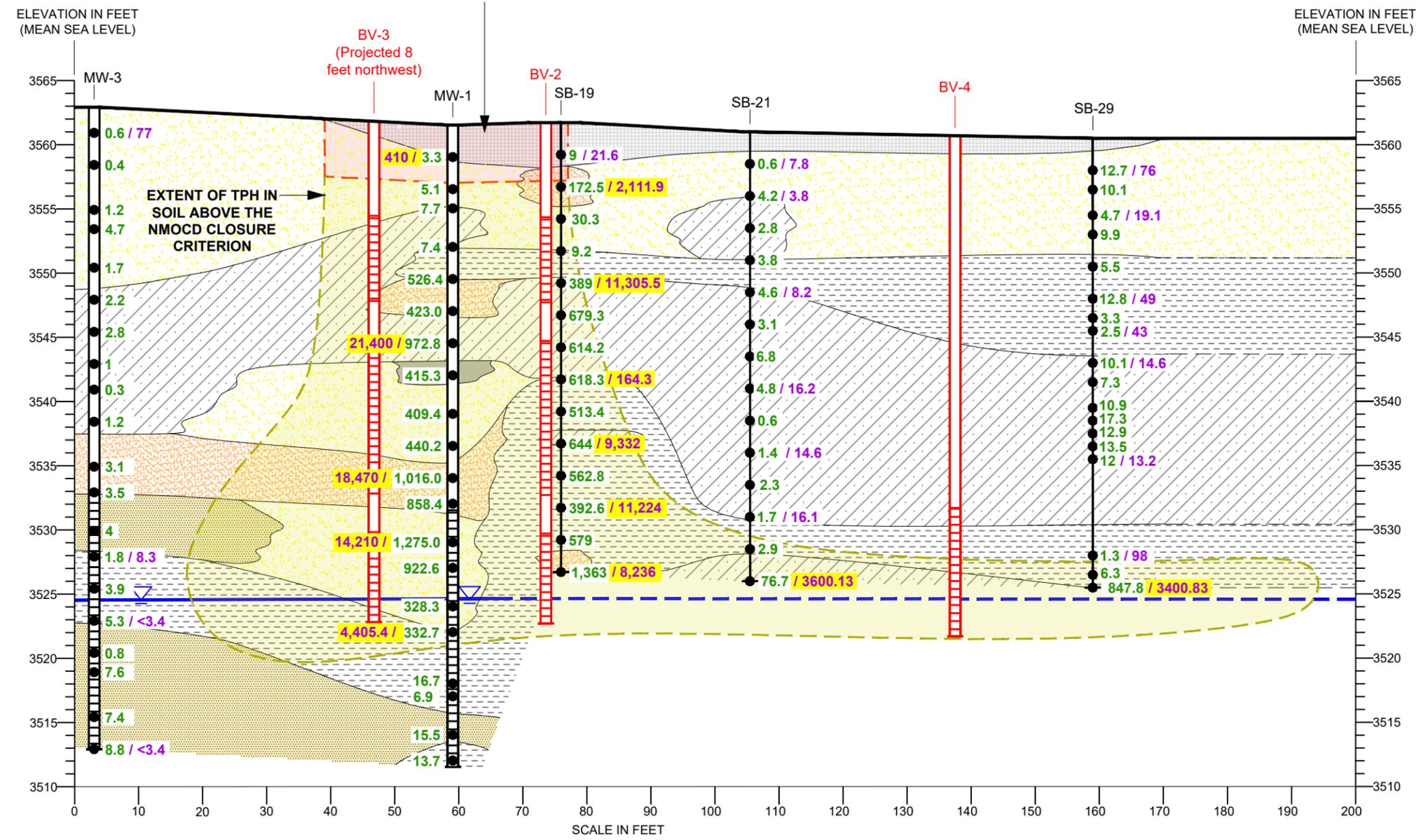
11X17 - USER: Tmaurus - ATTACHED XREFS - ... ATTACHED IMAGES - ...  
 DRAWING NAME: C:\Users\Tmaurus\OneDrive - TRC\Desktop\BIOVENT PROJECT\BIOVENT PROCESS FLOW.dwg --- PLOT DATE: September 21, 2022 - 2:29PM --- LAYOUT: 11X17L



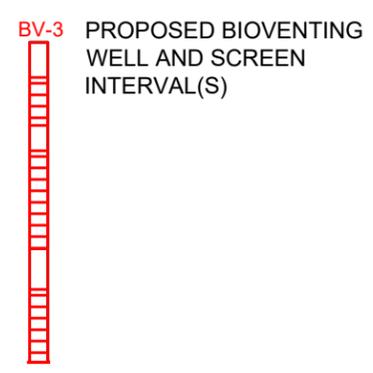
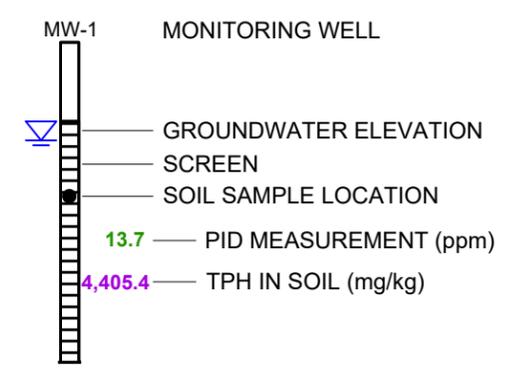
**B**  
West

**B'**  
East

AREA EXCAVATED TO A DEPTH OF 4.5 FEET BGS



**LEGEND**



**LITHOLOGY KEY:**

[Pattern]	Fill
[Pattern]	FINE SAND
[Pattern]	CLAYEY SAND
[Pattern]	SANDY CLAY
[Pattern]	CALICHE
[Pattern]	SANDSTONE
[Pattern]	SILTY SAND

**NOTES:**

- GROUNDWATER ELEVATIONS MEASURED AUGUST 2, 2022.
- BGS = BELOW GROUND SURFACE.
- MG/KG = MILLIGRAMS PER KILOGRAMS.
- NMOCD = NEW MEXICO OIL CONSERVATION DIVISION.
- PID = PHOTO-IONIZATION DETECTOR.
- PPM = PARTS PER MILLION.
- TPH = TOTAL PETROLEUM HYDROCARBONS.
- YELLOW HIGHLIGHT** INDICATES TPH CONCENTRATION EXCEEDS THE NMOCD CLOSURE CRITERION.
- FINAL SCREEN INTERVALS AT BV-2, BV-3, AND BV-4 MAY BE ADJUSTED TO BIAS MORE PERMEABLE UNITS PENDING LITHOLOGY OBSERVED.

PROJECT: HOLLY ENERGY PARTNERS - OPERATING, L.P.  
MONUMENT, LEA COUNTY, NEW MEXICO  
WTX TO EMSU BATTERY RELEASE SITE

TITLE: **GEOLOGIC CROSS SECTION B-B'**

DRAWN BY: R. COLLINS    PROJ NO.: 497744.0000.0000  
CHECKED BY: D. HELBERT  
APPROVED BY: D. HELBERT  
DATE: SEPTEMBER 2022

**FIGURE 7**

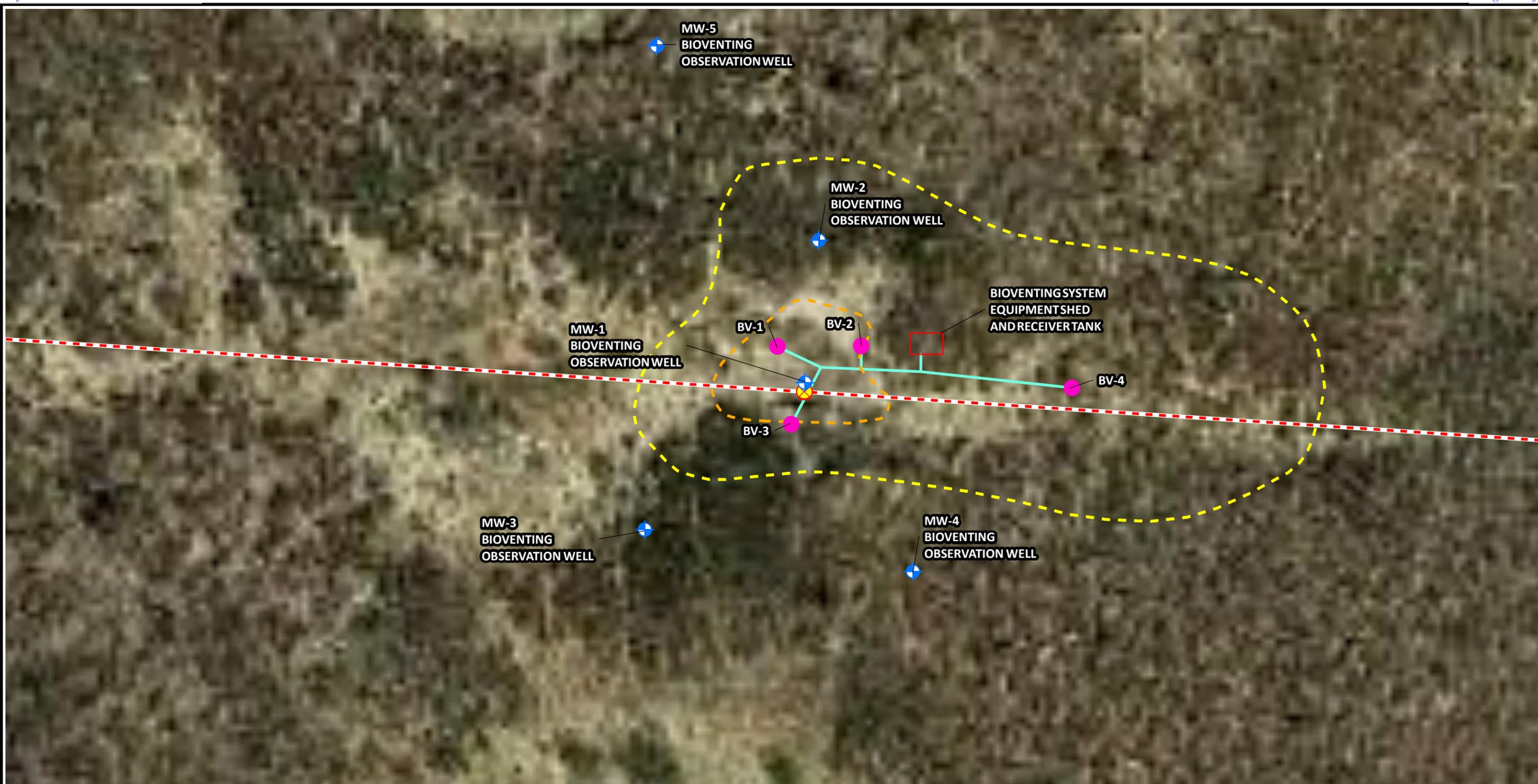
505 EAST HUNTLAND DRIVE  
SUITE #250  
AUSTIN, TX 78752  
PHONE: 512.239.6080

FILE NO.: HEP\_WTX\_Cross\_Sections.dwg

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 FUS (Foot US)  
Map Rotation: 0

Plot Date: 10/6/2022 13:24:21 PM by MJAGOE -- LAYOUT: ANSI B(11"x17")  
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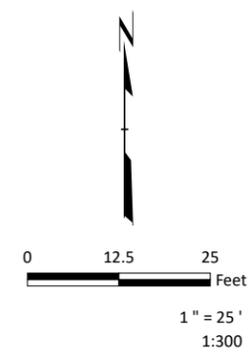


**LEGEND**

- OBSERVATION WELL
- 6" GATHERING LINE
- RELEASE
- PROPOSED BIOVENTING INJECTION WELL LOCATION
- EXTENT OF SOIL BENEATH 4 FEET BGS WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA
- FORMER EXTENT OF SURFACE SOIL (0-4 FEET BGS) WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA (NOTE 5)
- PROPOSED SYSTEM PIPING

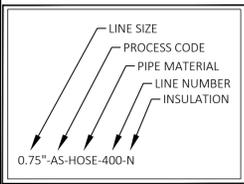
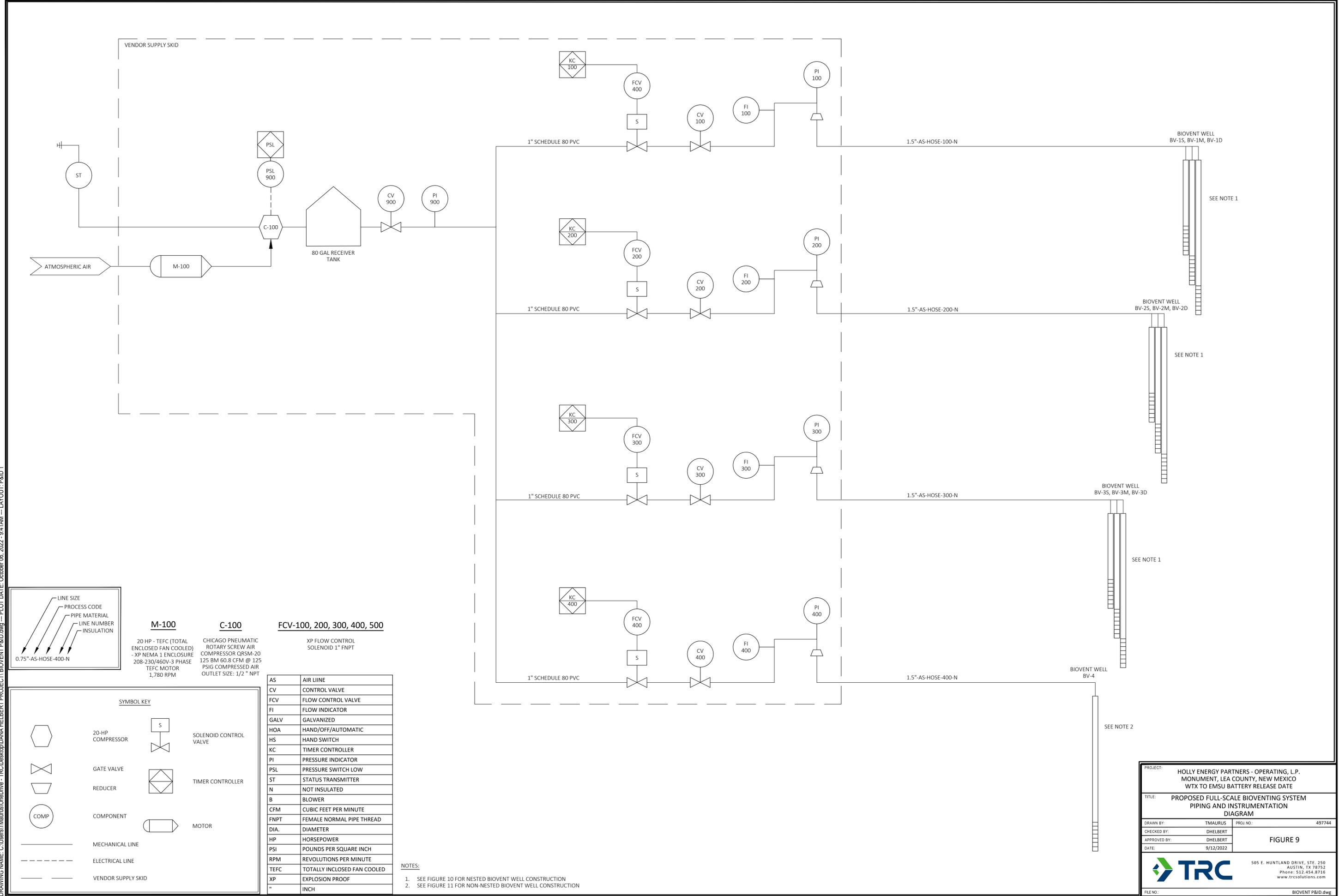
SOURCE: AERIAL IMAGERY - GOOGLE AND THEIR DATA PARTNERS (11/2/2017)

- NOTES:**
1. PROPOSED BIOVENTING WELLS BV-1, BV-2, AND BV-3 ARE NESTED WELLS WITH THREE PROPOSED SCREEN INTERVALS EACH.
  2. PROPOSED BIOVENTING WELL BV-4 IS NON-NESTED WITH ONE PROPOSED SCREEN INTERVAL.
  3. SEE FIGURE 9 FOR ADDITIONAL SYSTEM DETAILS.
  4. BIOVENTING INJECTION RADIUS OF INFLUENCE OF 90 FEET ADDRESSES ENTIRE TPH-AFFECTED AREA. NOT SHOWN ON MAP.
  5. EXCAVATION OF SURFACE SOIL WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA CONDUCTED TO DEPTH OF 4.5 FEET BGS IN AUGUST 2022.



PROJECT:		<b>HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE</b>	
TITLE:		<b>PROPOSED FULL-SCALE BIOVENTING SYSTEM LOCATION MAP</b>	
DRAWN BY:	M. JAGOE	PROJ NO.:	497744
CHECKED BY:		<b>FIGURE 8</b>	
APPROVED BY:			
DATE:	OCTOBER 2022		
		505 EAST HUNTLAND DRIVE, SUITE 250 AUSTIN, TX 78752 PHONE: 512.329.6080 WWW.TRCSOLUTIONS.COM	
FILE NO.:	497744_8.mxd		

2438 - USER: Tmaurj - ATTACHED: REFRES - ATTACHED IMAGES - TRC Desktop\DNA HELBERT PROJECT\BIOVENT P&ID.dwg --- PLOT DATE: October 06, 2022 - 9:41AM --- LAYOUT: P&ID 1



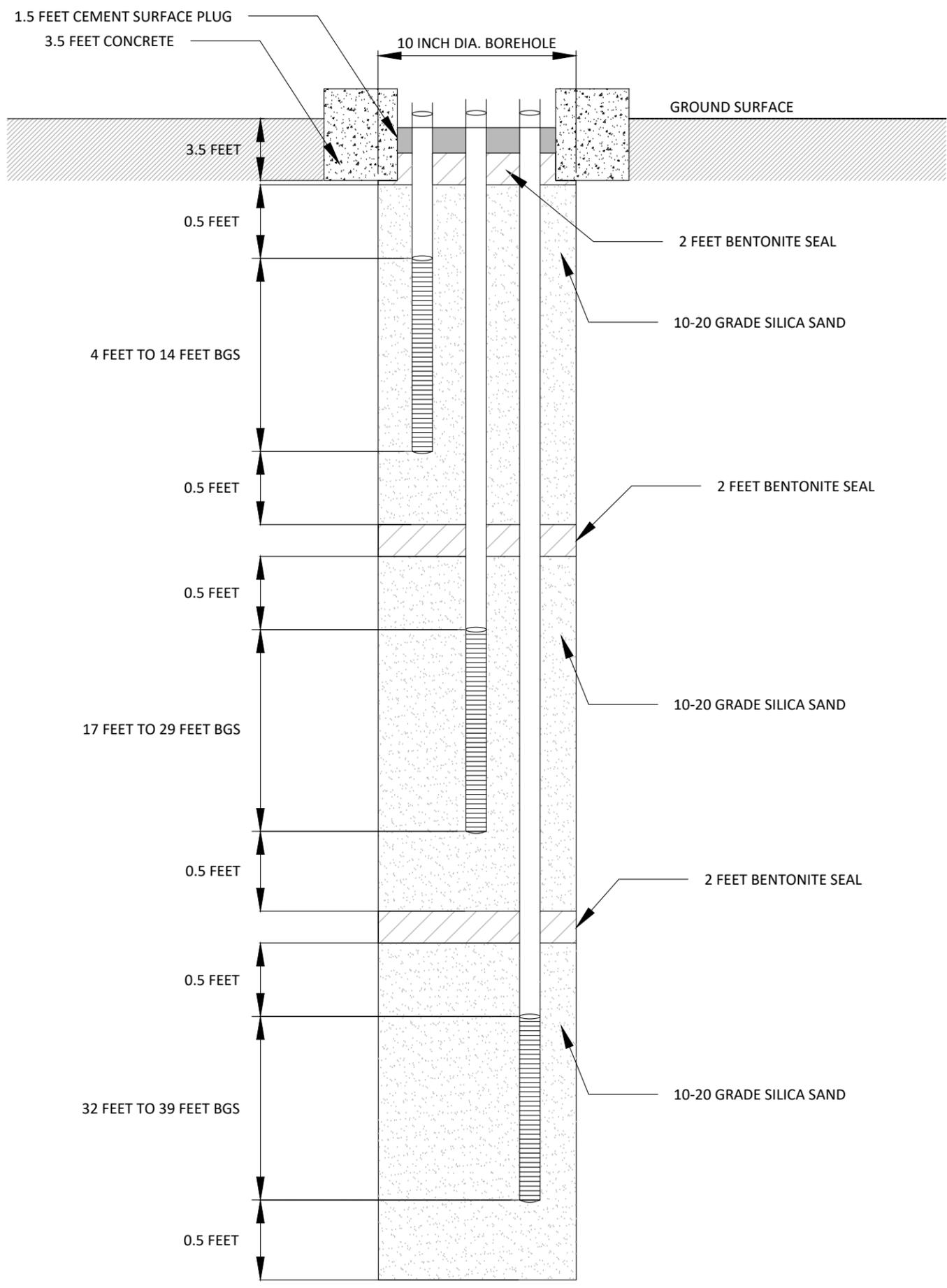
<b>M-100</b>	<b>C-100</b>	<b>FCV-100, 200, 300, 400, 500</b>
20 HP - TEFC (TOTAL ENCLOSED FAN COOLED) -> XP NEMA 1 ENCLOSURE 208-230/460V-3 PHASE TEFC MOTOR 1,780 RPM	CHICAGO PNEUMATIC ROTARY SCREW AIR COMPRESSOR QRSM-20 125 BM 60.8 CFM @ 125 PSIG COMPRESSED AIR OUTLET SIZE: 1/2" NPT	XP FLOW CONTROL SOLENOID 1" FNPT

SYMBOL KEY	
	20-HP COMPRESSOR
	GATE VALVE
	REDUCER
	COMPONENT
	MECHANICAL LINE
	ELECTRICAL LINE
	VENDOR SUPPLY SKID
	SOLENOID CONTROL VALVE
	TIMER CONTROLLER
	MOTOR

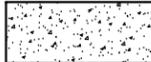
AS	AIR LINE
CV	CONTROL VALVE
FCV	FLOW CONTROL VALVE
FI	FLOW INDICATOR
GALV	GALVANIZED
HOA	HAND/OFF/AUTOMATIC
HS	HAND SWITCH
KC	TIMER CONTROLLER
PI	PRESSURE INDICATOR
PSL	PRESSURE SWITCH LOW
ST	STATUS TRANSMITTER
N	NOT INSULATED
B	BLOWER
CFM	CUBIC FEET PER MINUTE
FNPT	FEMALE NORMAL PIPE THREAD
DIA.	DIAMETER
HP	HORSEPOWER
PSI	POUNDS PER SQUARE INCH
RPM	REVOLUTIONS PER MINUTE
TEFC	TOTALLY INCLOSED FAN COOLED
XP	EXPLOSION PROOF
"	INCH

- NOTES:
- SEE FIGURE 10 FOR NESTED BIOVENT WELL CONSTRUCTION
  - SEE FIGURE 11 FOR NON-NESTED BIOVENT WELL CONSTRUCTION

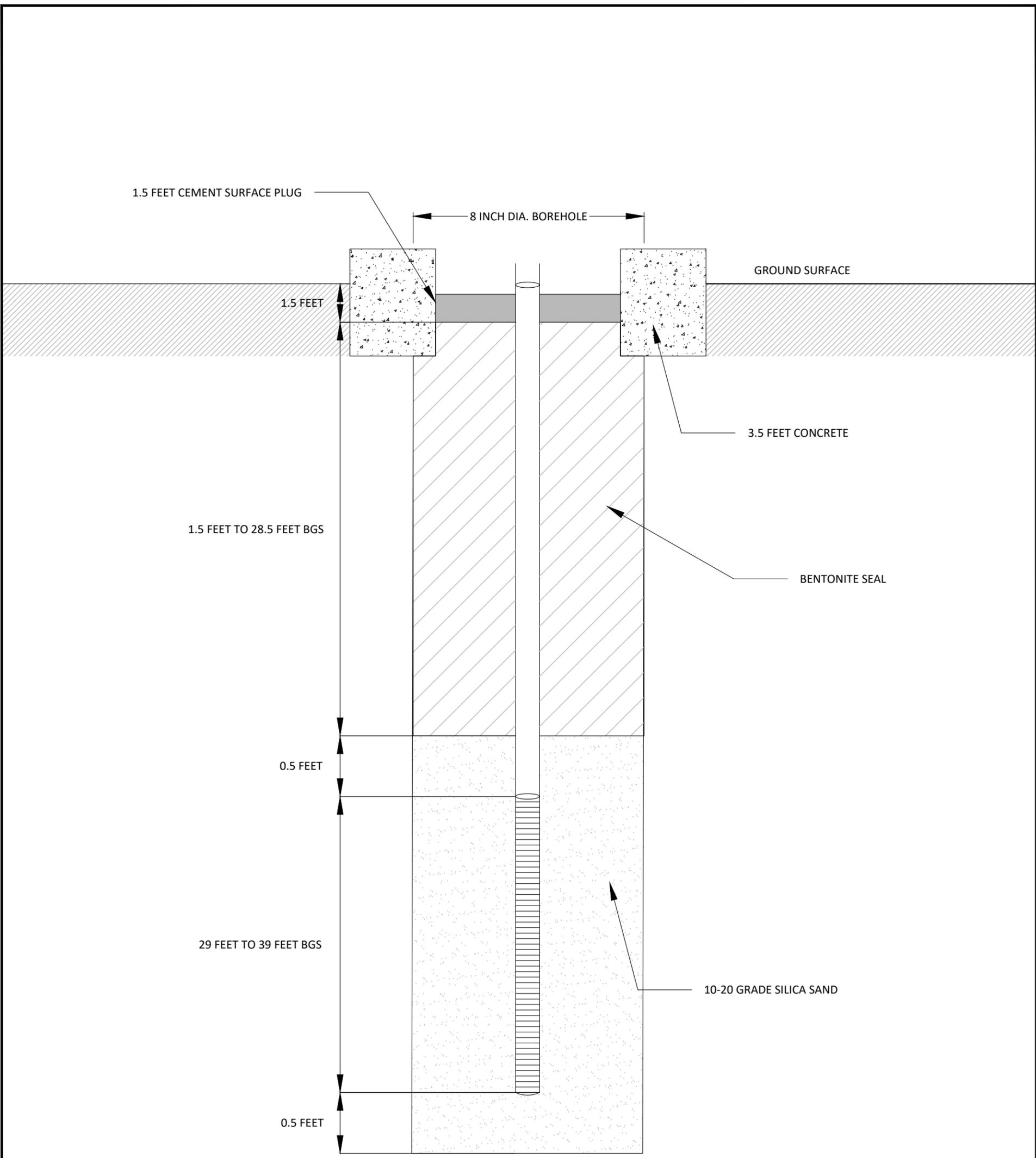
PROJECT: HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE DATE	
TITLE: PROPOSED FULL-SCALE BIOVENTING SYSTEM PIPING AND INSTRUMENTATION DIAGRAM	
DRAWN BY: TMAJRLJS	PROJ. NO.: 497744
CHECKED BY: DHIELBERT	FIGURE 9
APPROVED BY: DHIELBERT	
DATE: 9/12/2022	
505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
FILE NO:	BIOVENT P&ID.dwg



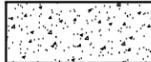
- NOTES:
1. BGS = BELOW GROUND SURFACE
  2. NOT DRAWN TO SCALE
  3. FINAL SCREEN INTERVALS AT BV-1, BV-2, AND BV-3 MAY BE ADJUSTED TO BIAS MORE PERMEABLE UNITS PENDING LITHOLOGY OBSERVED

	BENTONITE SEAL		10-20 GRADE SILICA SAND
	CONCRETE		CEMENT SURFACE PLUG
	0.020-INCH SCREENED INTERVAL		2" SCHEDULE 40 PVC

PROJECT: HOLLY ENERGY PARTNERS - OPERATING L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE: PROPOSED NON-NESTED BIOVENTING WELL SCHEMATIC	
DRAWN BY: TMAURUS	PROJ NO.: 497744
CHECKED BY: DHELBERT	
APPROVED BY: DHELBERT	
DATE: 9/19/2022	
<b>FIGURE 10</b>	
	
505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
FILE NO.:	FIGURE 11.dwg



- NOTES:
1. BGS = BELOW GROUND SURFACE
  2. NOT DRAWN TO SCALE
  3. FINAL SCREEN INTERVAL AT BV-4 MAY BE ADJUSTED TO BIAS MORE PERMEABLE UNITS PENDING LITHOLOGY OBSERVED

	BENTONITE SEAL		10-20 GRADE SILICA SAND
	CONCRETE		CEMENT SURFACE PLUG
	0.020-INCH SCREENED INTERVAL		2" SCHEDULE 40 PVC

PROJECT: HOLLY ENERGY PARTNERS - OPERATING L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE: PROPOSED NON-NESTED BIOVENTING WELL SCHEMATIC	
DRAWN BY: TMAURUS	PROJ NO.: 497744
CHECKED BY: DHELBERT	
APPROVED BY: DHELBERT	
DATE: 9/19/2022	
<b>FIGURE 11</b>	
 505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
FILE NO.:	FIGURE 11.dwg

**TABLES**

TABLE 1: SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
 WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE, LEA COUNTY, NM

Location Details	Boring ID	Depth Interval (feet bgs)	Sample Date	Constituent of Concern (COC)										
				BTEX (mg/kg)					TPH (mg/kg)				Chloride <sup>4</sup> (mg/kg)	
				Benzene	Ethyl-benzene	Toluene	Total Xylenes	Total BTEX <sup>2</sup>	GRO	DRO	MRO	TPH <sup>3</sup>		
<b>NMOCD Closure Criteria<sup>1</sup></b>				<b>10</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>50</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>100</b>	<b>600</b>	
SOURCE AREA	SB-1 (GHD)	(4-5')	9/28/2018	<0.00210	<0.00210	<0.00210	<0.00210	<0.00210	<15.7	<15.7	<15.7	<15.7	<5.22	
		(20-21')	9/28/2018	<0.00271	<0.00271	<0.00271	<0.00271	<0.00271	<20.4	22.7	<20.4	22.7	625	
		(34-35')	9/28/2018	<0.00242	0.00418	<0.00242	0.0166	0.0208	34.1	1030	178	1,242.1	77.9	
	SB-05 (MW-1)	(2.5-3')	11/3/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.050	120	290	410	5.91	
		(16.5-17')	11/3/2020	<0.0048	0.16	0.0097	0.5	0.6697	200	13000	8200	21,400	148	
		(27.5-28')	11/3/2020	<0.0050	0.13	<0.0050	0.18	0.31	170	11000	7300	18,470	<4.98	
(32.5-33')		11/3/2020	<0.0050	0.16	<0.0050	0.55	0.71	110	8000	6100	14,210	14.0		
	(39-40')	11/3/2020	<0.0048	0.047	<0.0048	0.042	0.089	5.4	2400	2000	4,405.4	60.6		
LATERAL DELINEATION	North	SB-06 (MW-2)	(2.5-3')	11/4/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.050	3.6	6.8	10.4	<4.91	
			(14.5-15')	11/4/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.052	3.5	5.3	8.8	386	
			(39.5-40')	11/4/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.048	0.3	400	390	790.3	98.1
			Duplicate-01	11/4/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	0.36	390	470	860.36	95.5
		(47.5-48')	11/4/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.048	<0.048	4.2	5.1	9.3	166	
	Northeast	SB-14	1.5' (16-18")	11/6/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	16	9100	8000	17,116	<4.99
			4' (46-48")	11/6/2020	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	13	5500	4700	10,213	<5.00
			Duplicate-02	11/6/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	7.4	4700	4300	9,007.4	<5.00
		SB-16	1.5' (13-20")	11/6/2020	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.053	2.6	6.2	8.8	<4.98
			4' (44-46")	11/6/2020	<0.0052	<0.0052	<0.0052	<0.0052	<0.0052	<0.054	<1.7	5.1	5.1	<4.95
		SB-19 (Adjacent to SB-14)	(2-3')	5/27/2021	NA	NA	NA	NA	NA	<0.052	5.6	16	21.6	NA
			(4-5')	5/27/2021	NA	NA	NA	NA	NA	1.9	910	1200	2,111.9	NA
			(11-12')	5/27/2021	NA	NA	NA	NA	NA	5.5	5700	5600	11,305.5	NA
			(19-20')	5/27/2021	NA	NA	NA	NA	NA	7.3	79	78	164.3	NA
			(24-25')	5/27/2021	NA	NA	NA	NA	NA	32	4900	4400	9,332	NA
			(29-30')	5/27/2021	NA	NA	NA	NA	NA	24	6100	5100	11,224	NA
			(34-35')	5/27/2021	NA	NA	NA	NA	NA	56	3100	2800	5,956	NA
		Dup-02	5/27/2021*	NA	NA	NA	NA	NA	36	4400	3800	8,236	NA	
SB-19A		2-3	8/15/2022	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	NA	NA	NA	NA	NA	
	4-5	8/15/2022	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	NA	NA	NA	NA	NA		
	11-12	8/15/2022	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	NA	NA	NA	NA	NA		
	19-20	8/15/2022	<0.0050	0.14	<0.0050	0.11	0.25	NA	NA	NA	NA	NA		
	24-25	8/15/2022	<0.0048	0.037	<0.0048	0.048	0.085	NA	NA	NA	NA	NA		
	29-30	8/15/2022	<0.0049	0.091	<0.0049	0.099	0.190	NA	NA	NA	NA	NA		
	Duplicate-1 [29-30']	8/15/2022	<0.0050	0.064	<0.0050	0.070	0.134	NA	NA	NA	NA	NA		
34-35	8/15/2022	<0.0049	0.033	<0.0049	0.059	0.092	NA	NA	NA	NA	NA			
SB-30	(1-2')	10/6/2021	NA	NA	NA	NA	NA	<0.052	4.5	9.4	13.9	NA		
	(5-6')	10/6/2021	NA	NA	NA	NA	NA	<0.049	7.9	14	21.9	NA		
	(11-12')	10/6/2021	NA	NA	NA	NA	NA	<0.048	41	12	53	NA		
	(14-15')	10/6/2021	NA	NA	NA	NA	NA	<0.050	17	60	77	NA		
	(19-20')	10/6/2021	NA	NA	NA	NA	NA	<0.048	29	7.4	36.4	NA		
	(25-26')	10/6/2021	NA	NA	NA	NA	NA	<0.054	14	6.4	20.4	NA		
	(29-30')	10/6/2021	NA	NA	NA	NA	NA	<0.050	6.6	8.7	15.3	NA		
(34-35')	10/6/2021	NA	NA	NA	NA	NA	<0.051	6.9	23	29.9	NA			
East	SB-3 (GHD)	(4-5')	9/28/2018	<0.00231	<0.00231	<0.00231	<0.00231	<0.00231	<17.4	<17.4	<17.4	<17.4	<5.76	
		(24-25')	9/28/2018	<0.00217	<0.00217	<0.00217	<0.00217	<0.00217	<16.4	<16.4	<16.4	<16.4	37.8	
	SB-09	2' (24-26")	11/6/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.052	480	1400	1,880	<4.96	
		4' (46-48")	11/6/2020	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.054	100	700	800	<4.97	
	SB-10	3' (36-38")	11/6/2020	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.050	<1.7	<3.4	<3.4	<4.99	
	SB-21	(2-3')	5/27/2021	NA	NA	NA	NA	NA	<0.054	7.8	<3.4	7.8	NA	
		(4-5')	5/27/2021	NA	NA	NA	NA	NA	<0.049	<1.7	3.8	3.8	NA	
		(11-12')	5/27/2021	NA	NA	NA	NA	NA	<0.056	3.2	5.0	8.2	NA	
		(19-20')	5/27/2021	NA	NA	NA	NA	NA	<0.050	5.2	11	16.2	NA	
		(24-25')	5/27/2021	NA	NA	NA	NA	NA	<0.054	7.9	6.7	14.6	NA	
		(29-30')	5/27/2021	NA	NA	NA	NA	NA	<0.054	6.8	9.3	16.1	NA	
(34-35')	5/28/2021	NA	NA	NA	NA	NA	0.13	1,400	2,200	3,600.13	NA			
SB-23	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS		

**TABLE 1: SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS**  
**WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE, LEA COUNTY, NM**

Location Details	Boring ID	Depth Interval (feet bgs)	Sample Date	Constituent of Concern (COC)									
				BTEX (mg/kg)					TPH (mg/kg)				Chloride <sup>4</sup> (mg/kg)
				Benzene	Ethyl-benzene	Toluene	Total Xylenes	Total BTEX <sup>2</sup>	GRO	DRO	MRO	TPH <sup>3</sup>	
<b>NMOCD Closure Criteria<sup>1</sup></b>				<b>10</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>50</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>100</b>	<b>600</b>
East	SB-29	(1-2')	10/5/2021	NA	NA	NA	NA	NA	<0.048	20	56	76	NA
		(5-6')	10/5/2021	NA	NA	NA	NA	NA	<0.050	9.1	10	19.1	NA
		(11-12')	10/5/2021	NA	NA	NA	NA	NA	<0.054	32	17	49	NA
		(14-15')	10/5/2021	NA	NA	NA	NA	NA	<0.050	12	31	43	NA
		(17-18')	10/5/2021	NA	NA	NA	NA	NA	<0.050	7.7	6.9	14.6	NA
		(25-26')	10/5/2021	NA	NA	NA	NA	NA	<0.048	6.7	6.5	13.2	NA
		(29-30')	10/5/2021	NA	NA	NA	NA	NA	<0.052	35	63	98	NA
		(34-35')	10/7/2021	NA	NA	NA	NA	NA	0.83	1,300	2,100	3,400.83	NA
	DUP-02	10/7/2021	NA	NA	NA	NA	NA	2.5	2,200	3,700	5,902.5	NA	
	SB-31	(3-4')	10/7/2021	NA	NA	NA	NA	NA	<0.051	41	41	82	NA
		DUP-03	10/7/2021	NA	NA	NA	NA	NA	<0.051	17	40	57	NA
		(5-6')	10/7/2021	NA	NA	NA	NA	NA	<0.056	82	45	127	NA
		(9-10')	10/7/2021	NA	NA	NA	NA	NA	<0.056	6.8	13	19.8	NA
		(16-17')	10/7/2021	NA	NA	NA	NA	NA	<0.048	3.3	6.7	10	NA
		(19-20')	10/7/2021	NA	NA	NA	NA	NA	<0.049	12	29	41	NA
		(23-24')	10/8/2021	NA	NA	NA	NA	NA	<0.052	3.9	6.7	10.6	NA
		(25-26')	10/8/2021	NA	NA	NA	NA	NA	<0.056	35	13	48	NA
	(30-31')	10/8/2021	NA	NA	NA	NA	NA	<0.052	7.1	6.2	13.3	NA	
(34-35')	10/8/2021	NA	NA	NA	NA	NA	<0.052	21	6.7	27.7	NA		
Southeast	SB-08 (MW-4)	(2-2.5')	11/5/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<1.7	4.1	4.1	<4.99
		(14.5-15')	11/5/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.054	<1.7	<3.4	<3.4	268
		(39.5-40')	11/5/2020	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.051	<1.7	<3.4	<3.4	73.2
	SB-24	(2')	5/24/2021	NA	NA	NA	NA	NA	<0.052	6.2	33	39.2	NA
(4')	5/24/2021	NA	NA	NA	NA	NA	<0.050	<1.7	3.6	3.6	NA		
South	SB-2 (GHD)	(4-5')	9/28/2018	<0.00215	<0.00215	<0.00215	<0.00215	<0.00215	<16.0	<16.0	<16.0	<16.0	<5.34
		(10-11')	9/28/2018	<0.00225	<0.00225	<0.00225	<0.00225	<0.00225	<16.8	<16.8	<16.8	<16.8	381
		(34-35')	9/28/2018	<0.00238	<0.00238	<0.00238	<0.00238	<0.00238	<17.8	<17.8	<17.8	<17.8	84.2
	SB-15	2' (24-26")	11/6/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.054	<1.7	12	12	<5.00
		4' (46-48")	11/6/2020	<0.0049	<0.0049	<0.0049	<0.0049	<0.0049	<0.050	<1.7	11	11	<4.97
	SB-26	(2-3')	5/28/2021	NA	NA	NA	NA	NA	<0.052	19	15	34	NA
		(4-5')	5/28/2021	NA	NA	NA	NA	NA	<0.052	<1.7	9.3	9.3	NA
		(9-10')	5/28/2021	NA	NA	NA	NA	NA	<0.053	2.4	5.1	7.5	NA
		(14-15')	5/28/2021	NA	NA	NA	NA	NA	<0.052	11	16	27	NA
		(21-22')	5/28/2021	NA	NA	NA	NA	NA	<0.054	<1.7	<3.4	<3.4	NA
(29-30')	5/28/2021	NA	NA	NA	NA	NA	<0.047	<1.7	<3.4	<3.4	NA		
(34-35')	5/28/2021	NA	NA	NA	NA	NA	<0.054	<1.7	<3.4	<3.4	NA		
Southwest	SB-07 (MW-3)	(2-2.5')	11/4/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.052	52	25	77	6.57
		(34.5-35')	11/4/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.051	4.1	4.2	8.3	402
		(39.5-40')	11/4/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.054	<1.7	<3.4	<3.4	105
		(49-50')	11/4/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.048	<1.7	<3.4	<3.4	114
	SB-28	(2')	5/28/2021	NA	NA	NA	NA	NA	<0.050	2.4	4.4	6.8	NA
(3.5')	5/28/2021	NA	NA	NA	NA	NA	<0.050	<1.7	6.6	6.6	NA		
West	SB-4 (GHD)	(4-5')	9/28/2018	<0.00219	<0.00219	<0.00219	<0.00219	<0.00219	<16.2	<16.2	<16.2	<16.2	<5.46
		(24-25')	9/28/2018	<0.00226	<0.00226	<0.00226	<0.00226	<0.00226	<16.9	<16.9	<16.9	<16.9	513
		(34-35')	9/28/2018	<0.00236	<0.00236	<0.00236	<0.00236	<0.00236	<17.7	<17.7	<17.7	<17.7	262
	SB-11	2' (24-26")	11/6/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.050	5.2	28	33.2	<4.99
		3.5' (40-43")	11/6/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.052	44	110	154	<4.97
	SB-12	4' (46-48")	11/6/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.048	<1.7	5.3	5.3	<5.00
	SB-20	(2-3')	5/27/2021	NA	NA	NA	NA	NA	<0.051	15	11	26	NA
		(4-5')	5/27/2021	NA	NA	NA	NA	NA	<0.056	17	4.5	21.5	NA
		(9-10')	5/27/2021	NA	NA	NA	NA	NA	<0.052	9.7	5.5	15.2	NA
		(14-15')	5/27/2021	NA	NA	NA	NA	NA	<0.052	12	<3.4	12	NA
		(19-20')	5/27/2021	NA	NA	NA	NA	NA	<0.058	7.7	7.0	14.7	NA
		(24-25')	5/27/2021	NA	NA	NA	NA	NA	<0.055	5.3	13	18.3	NA
(29-30')		5/27/2021	NA	NA	NA	NA	NA	<0.049	<1.7	<3.4	<3.4	NA	
(34-35')	5/27/2021	NA	NA	NA	NA	NA	<0.054	2.7	5.0	7.7	NA		
SB-22	4-4.5'	5/24/2021	NA	NA	NA	NA	NA	<0.044	<1.7	4.4	4.4	NA	

**TABLE 1: SUMMARY OF SOIL SAMPLE ANALYTICAL RESULTS  
WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE, LEA COUNTY, NM**

Location Details	Boring ID	Depth Interval (feet bgs)	Sample Date	Constituent of Concern (COC)											
				BTEX (mg/kg)					TPH (mg/kg)				Chloride <sup>4</sup> (mg/kg)		
				Benzene	Ethyl-benzene	Toluene	Total Xylenes	Total BTEX <sup>2</sup>	GRO	DRO	MRO	TPH <sup>3</sup>			
<b>NMOCD Closure Criteria<sup>1</sup></b>				<b>10</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>50</b>	<b>None</b>	<b>None</b>	<b>None</b>	<b>100</b>	<b>600</b>		
<b>LATERAL DELINEATION</b>	<b>Northwest</b>	SB-13	1.5' (16-18")	11/6/2020	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.052	<b>740</b>	<b>2,100</b>	<b>2,840</b>	<5.00	
			3.5' (38-40")	11/6/2020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.054	<b>87</b>	<b>530</b>	<b>617</b>	<4.97	
		SB-18 (Adjacent to SB-13)	(2-3')	5/26/2021	NA	NA	NA	NA	NA	NA	<b>0.064</b>	<b>12</b>	<b>49</b>	<b>61.064</b>	NA
			(4-5')	5/26/2021	NA	NA	NA	NA	NA	NA	<b>0.087</b>	<b>240</b>	<b>1,400</b>	<b>1,640.087</b>	NA
			(9-10')	5/26/2021	NA	NA	NA	NA	NA	NA	<b>0.080</b>	<b>170</b>	<b>670</b>	<b>840.08</b>	NA
			(14-15')	5/26/2021	NA	NA	NA	NA	NA	NA	<b>34</b>	<b>6,600</b>	<b>5,500</b>	<b>12,134</b>	NA
			Dup-01	5/26/2021	NA	NA	NA	NA	NA	NA	<b>26</b>	<b>5,700</b>	<b>4,500</b>	<b>10,226</b>	NA
			(19-20')	5/26/2021	NA	NA	NA	NA	NA	NA	<b>130</b>	<b>2,300</b>	<b>2,700</b>	<b>5,130</b>	NA
			(24-25')	5/27/2021	NA	NA	NA	NA	NA	NA	<b>29</b>	<b>2,600</b>	<b>2,400</b>	<b>5,029</b>	NA
		(26-27')	5/27/2021	NA	NA	NA	NA	NA	NA	<b>14</b>	<b>4,000</b>	<b>4,100</b>	<b>8,114</b>	NA	
	(29-30')	5/27/2021	NA	NA	NA	NA	NA	NA	<b>18</b>	<b>5,400</b>	<b>5,100</b>	<b>10,518</b>	NA		
	SB-25 (MW-5)	(2-3')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.052	<1.7	<b>4.0</b>	<b>4.0</b>	<4.96	
		(11-12')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.046	<1.7	<b>7.7</b>	<b>7.7</b>	<b>89.7</b>	
		(16-17')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.052	<b>76</b>	<b>11</b>	<b>87</b>	<b>194</b>	
		(26-27')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.048	<b>13</b>	<b>7.1</b>	<b>20.1</b>	<b>301</b>	
		(34-35')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.046	<b>5.2</b>	<b>11</b>	<b>16.2</b>	<b>63.9</b>	
		(39-40')	5/26/2021	NA	NA	NA	NA	NA	NA	<0.058	<b>88</b>	<b>5.1</b>	<b>93.1</b>	<b>151</b>	
	SB-27	Dup-03	5/26/2021	NA	NA	NA	NA	NA	NA	<0.050	<b>2.8</b>	<b>4.4</b>	<b>7.2</b>	<b>190</b>	
		(2')	5/28/2021	NA	NA	NA	NA	NA	NA	<0.051	<b>2.2</b>	<b>3.4</b>	<b>5.6</b>	NA	
		(3.5')	5/28/2021	NA	NA	NA	NA	NA	NA	<0.054	<b>1.8</b>	<3.4	<b>1.8</b>	NA	
<b>EXCAVATION</b>	<b>Sidewall</b>	CS-SW-1@2.25'	2.25	8/18/2022	NA	NA	NA	NA	NA	<0.049	<b>16</b>	<b>28</b>	<b>44</b>	NA	
		CS-SW-2@2.25'	2.25	8/18/2022	NA	NA	NA	NA	NA	<0.049	<b>2.5</b>	<b>6.3</b>	<b>8.8</b>	NA	
		CS-SW-3@2.25'	2.25	8/18/2022	NA	NA	NA	NA	NA	<0.048	<b>190</b>	<b>1,200</b>	<b>1,390</b>	NA	
		CS-SW-3a@2.25'	2.25	8/25/2022	NA	NA	NA	NA	NA	<0.050	<b>2.3</b>	<b>5.8</b>	<b>8.1</b>	NA	
		CS-SW-4@2.25'	2.25	8/18/2022	NA	NA	NA	NA	NA	<0.050	<b>3.5</b>	<b>5.9</b>	<b>9.4</b>	NA	
	<b>Floor</b>	CS-1@4.5'	4.5	8/18/2022	NA	NA	NA	NA	NA	<0.049	<b>800</b>	<b>2,300</b>	<b>3,100</b>	NA	
		CS-2@4.5'	4.5	8/18/2022	NA	NA	NA	NA	NA	<0.050	<b>330</b>	<b>1,600</b>	<b>1,930</b>	NA	
		Duplicate-1 [CS-2@4.5']	4.5	8/18/2022	NA	NA	NA	NA	NA	<0.050	<b>340</b>	<b>1,700</b>	<b>2,040</b>	NA	
		CS-3@4.5'	4.5	8/18/2022	NA	NA	NA	NA	NA	<0.048	<b>650</b>	<b>1,700</b>	<b>2,350</b>	NA	
		CS-4@4.5'	4.5	8/18/2022	NA	NA	NA	NA	NA	<0.050	<b>21</b>	<b>64</b>	<b>85</b>	NA	
		CS-5@4.5'	4.5	8/18/2022	NA	NA	NA	NA	NA	<b>15</b>	<b>5,500</b>	<b>6,300</b>	<b>11,815</b>	NA	
		CS-6@4.5'	4.5	8/25/2022	NA	NA	NA	NA	NA	<0.050	<b>690</b>	<b>1,800</b>	<b>2,490</b>	NA	
		CS-7@4.5'	4.5	8/25/2022	NA	NA	NA	NA	NA	<0.050	<b>4.7</b>	<b>7.3</b>	<b>12.0</b>	NA	

**Notes:**

- bgs below ground surface
- BTEX Benzene, Toluene, Ethylbenzene, and Total Xylenes. TRC samples analyzed by EPA Method 8260; GHD samples analyzed by EPA Method 8021b.
- COC constituent of concern
- DRO Diesel Range Organics
- GRO Gasoline Range Organics
- MRO Motor Oil Range Organics
- mg/kg milligrams per kilogram
- NA Not Analyzed
- NMOCD New Mexico Oil Conservation District
- TPH Total Petroleum Hydrocarbons by EPA Method 8015
- ' feet
- < COC not detected above reporting limit
- Bold** Detected concentration
- Blue** Soil excavated and removed
- Bold** Concentration exceeds selected NMOCD Closure Criteria
- 1 Closure Criteria provided for sites with groundwater at a depth of less than 50 feet bgs
- 2 Total BTEX is the sum of the benzene + toluene + ethylbenzene + total xylenes concentrations
- 3 TPH is the sum of the GRO + DRO + MRO concentrations
- 4 Chloride analyzed by EPA Method 300.0

Day 1: August 9, 2022

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/9/2022	7:00	--	13.6	82	1.1	0	0	0.4	158.4	
MW-1	Injection	8/9/2022	19:29	--	21.2	17	0.0	0	0	0.0	0.5	
MW-2	Observation	8/9/2022	6:58	0.00	20.6	0	0.6	0	0	0.0	0.2	Begin injection at MW-1 at 07:46 at 6 cfm
MW-2	Observation	8/9/2022	8:53	0.04	20.2	0	0.2	0	0	0.0	2.7	Increase injection rate to 8 cfm at 09:13
MW-2	Observation	8/9/2022	9:58	0.00	19.2	0	1.1	0	0	0.0	3.0	
MW-2	Observation	8/9/2022	11:12	0.00	17.5	0	2.2	0	0	0.0	3.6	
MW-2	Observation	8/9/2022	14:46	0.13	19.6	6	0.6	0	0	0.0	2.3	Increase injection rate to 10 cfm at 14:26
MW-2	Observation	8/9/2022	15:35	0.19	18.0	0	2.4	0	0	0.0	2.0	
MW-2	Observation	8/9/2022	16:42	0.16	19.0	0	1.4	0	0	0.0	2.7	
MW-2	Observation	8/9/2022	17:35	0.07	19.6	7	0.7	0	0	0.1	4.5	
MW-2	Observation	8/9/2022	18:33	0.27	19.6	0	1.0	0	0	0.0	1.7	End injection at MW-1 at 18:58 at approximately 10 cfm
MW-2	Observation	8/9/2022	19:23	0.27	20.1	0	0.9	0	0	0.0	2.6	
MW-3	Observation	8/9/2022	6:55	0.00	20.8	0	0.2	0	0	0.0	0.3	Begin injection at MW-1 at 07:46 at 6 cfm
MW-3	Observation	8/9/2022	8:50	0.06	20.3	3	0.2	0	0	0.0	1.8	
MW-3	Observation	8/9/2022	9:54	0.07	17.7	0	2.1	0	0	0.0	0.4	
MW-3	Observation	8/9/2022	11:07	0.12	19.1	0	1.3	0	0	0.0	0.5	
MW-3	Observation	8/9/2022	14:42	0.19	16.2	0	3.7	0	0	0.0	2.3	Increase injection rate to 10 cfm at 14:26
MW-3	Observation	8/9/2022	15:30	0.19	15.1	0	4.9	0	0	0.1	4.7	
MW-3	Observation	8/9/2022	16:36	0.16	17.3	0	3.1	0	0	0.0	2.3	
MW-3	Observation	8/9/2022	17:30	0.15	17.4	0	2.9	0	0	0.1	5.5	
MW-3	Observation	8/9/2022	18:29	0.15	18.7	0	1.9	0	0	0.1	5.7	End injection at MW-1 at 18:58 at approximately 10 cfm
MW-3	Observation	8/9/2022	19:19	0.00	20.7	0	0.3	0	0	0.0	0.8	
MW-4	Observation	8/9/2022	6:53	0.06	20.7	0	0.2	0	0	0.0	0.1	Begin injection at MW-1 at 07:46 at 6 cfm
MW-4	Observation	8/9/2022	8:48	0.08	20.3	0	0.2	0	0	0.0	1.3	
MW-4	Observation	8/9/2022	9:52	0.01	19.7	0	0.7	0	0	0.0	1.5	
MW-4	Observation	8/9/2022	11:05	0.00	19.5	0	0.8	0	0	0.0	2.0	
MW-4	Observation	8/9/2022	14:39	0.10	18.1	0	2.2	0	0	0.1	1.4	Increase injection rate to 10 cfm at 14:26
MW-4	Observation	8/9/2022	15:27	0.13	19.9	0	0.7	0	0	0.1	1.5	
MW-4	Observation	8/9/2022	16:34	0.07	19.4	0	1.1	0	0	0.1	1.5	
MW-4	Observation	8/9/2022	17:27	0.03	20.0	0	0.3	0	0	0.1	7.7	
MW-4	Observation	8/9/2022	18:27	0.22	19.7	0	0.9	0	0	0.1	2.0	End injection at MW-1 at 18:58 at approximately 10 cfm
MW-4	Observation	8/9/2022	19:16	0.20	20.5	0	0.5	0	0	0.1	1.3	
MW-5	Observation	8/9/2022	6:57	0.00	20.7	0	0.2	0	0	0.0	0.1	Begin injection at MW-1 at 07:46 at 6 cfm
MW-5	Observation	8/9/2022	8:52	0.05	20.3	0	0.1	0	0	0.0	1.7	
MW-5	Observation	8/9/2022	9:57	0.00	19.9	0	0.1	0	0	0.0	0.8	
MW-5	Observation	8/9/2022	11:11	0.00	19.7	0	0.2	0	0	0.0	1.4	
MW-5	Observation	8/9/2022	14:44	0.13	19.6	0	0.5	0	0	0.0	1.1	Increase injection rate to 10 cfm at 14:26
MW-5	Observation	8/9/2022	15:33	0.14	20.0	0	0.3	0	0	0.0	1.0	
MW-5	Observation	8/9/2022	16:40	0.19	16.7	0	0.6	0	0	0.0	0.7	
MW-5	Observation	8/9/2022	17:32	0.05	19.7	0	0.4	0	0	0.1	3.3	
MW-5	Observation	8/9/2022	18:31	0.17	20.2	0	0.4	0	0	0.1	1.4	End injection at MW-1 at 18:58 at approximately 10 cfm
MW-5	Observation	8/9/2022	19:21	0.14	20.8	0	0.4	0	0	0.0	1.1	

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/10/2022	7:03	--	20.8	41	0.1	0	0	0.3	326.7	
MW-1	Injection	8/10/2022	19:36	--	20.7	81	0.1	0	0	0.0	12.3	
MW-2	Observation	8/10/2022	7:00	0.00	20.7	0	0.1	0	0	0.0	0.3	Begin injection at MW-1 at 07:08 at 11 cfm
MW-2	Observation	8/10/2022	8:12	0.00	20.6	1	0.1	0	0	0.0	2.6	
MW-2	Observation	8/10/2022	9:23	0.09	20.5	0	0.1	0	0	0.0	1.4	
MW-2	Observation	8/10/2022	10:15	0.00	19.8	0	0.2	0	0	0.0	1.7	
MW-2	Observation	8/10/2022	11:18	--	20.0	0	0.3	0	0	0.0	1.8	
MW-2	Observation	8/10/2022	12:52	0.17	18.6	0	1.7	0	0	0.0	1.1	
MW-2	Observation	8/10/2022	14:04	0.15	19.6	0	0.7	0	0	0.0	1.4	
MW-2	Observation	8/10/2022	14:55	0.18	17.8	0	2.1	0	0	0.0	1.2	
MW-2	Observation	8/10/2022	16:03	0.15	18.6	1	1.8	0	0	0.0	3.5	
MW-2	Observation	8/10/2022	16:54	0.23	19.1	0	1.4	0	0	0.0	2.2	
MW-2	Observation	8/10/2022	18:03	0.22	16.8	0	2.8	0	0	0.0	3.5	
MW-2	Observation	8/10/2022	18:52	0.26	18.7	0	1.6	0	0	0.0	1.6	End injection at MW-1 at 19:08 at approximately 10 cfm
MW-2	Observation	8/10/2022	19:34	0.25	19.6	0	0.9	0	0	0.0	1.6	
MW-3	Observation	8/10/2022	6:53	0.10	20.8	0	0.1	0	0	0.0	0.3	Begin injection at MW-1 at 07:08 at 11 cfm
MW-3	Observation	8/10/2022	8:07	0.21	20.8	1	0.1	0	0	0.0	0.6	
MW-3	Observation	8/10/2022	9:19	0.12	20.6	0	0.1	0	0	0.0	0.5	
MW-3	Observation	8/10/2022	10:10	0.15	20.5	1	0.1	0	0	0.0	0.8	
MW-3	Observation	8/10/2022	11:13	0.08	20.4	0	0.1	0	0	0.0	1.5	
MW-3	Observation	8/10/2022	12:48	0.20	20.0	1	0.4	0	0	0.0	3.4	
MW-3	Observation	8/10/2022	14:00	0.18	19.0	1	1.3	0	0	0.0	1.4	
MW-3	Observation	8/10/2022	14:50	0.20	18.0	1	2.1	0	0	0.0	2.1	
MW-3	Observation	8/10/2022	15:59	0.16	19.7	0	1.2	0	0	0.0	2.8	
MW-3	Observation	8/10/2022	16:49	0.20	19.3	1	2.5	0	0	0.0	1.5	
MW-3	Observation	8/10/2022	17:59	0.15	16.4	0	3.7	0	0	0.0	3.7	
MW-3	Observation	8/10/2022	18:48	0.14	17.7	0	2.6	0	0	0.0	1.0	End injection at MW-1 at 19:08 at approximately 10 cfm
MW-3	Observation	8/10/2022	19:30	0.00	20.3	1	0.4	0	0	0.0	0.3	
MW-4	Observation	8/10/2022	6:50	0.00	20.8	0	0.1	0	0	0.0	0.1	Begin injection at MW-1 at 07:08 at 11 cfm
MW-4	Observation	8/10/2022	8:05	0.08	20.8	1	0.1	0	0	0.0	0.5	
MW-4	Observation	8/10/2022	9:17	0.06	20.6	0	0.1	0	0	0.0	0.3	
MW-4	Observation	8/10/2022	10:08	0.10	20.5	0	0.4	0	0	0.0	0.3	
MW-4	Observation	8/10/2022	11:11	0.04	20.0	1	0.6	0	0	0.0	0.0	
MW-4	Observation	8/10/2022	12:46	0.11	19.2	0	1.7	0	0	0.0	1.9	
MW-4	Observation	8/10/2022	13:58	0.22	18.8	1	1.6	0	0	0.0	1.0	
MW-4	Observation	8/10/2022	14:47	0.04	18.5	0	1.9	0	0	0.0	1.9	
MW-4	Observation	8/10/2022	15:57	0.14	20.3	0	1.0	0	0	0.0	1.8	
MW-4	Observation	8/10/2022	16:47	0.24	20.3	0	1.0	0	0	0.0	1.5	
MW-4	Observation	8/10/2022	17:57	0.24	19.3	0	0.8	0	0	0.0	1.7	
MW-4	Observation	8/10/2022	18:46	0.25	19.5	0	1.0	0	0	0.0	0.5	End injection at MW-1 at 19:08 at approximately 10 cfm
MW-4	Observation	8/10/2022	19:28	0.22	20.2	0	0.5	0	0	0.0	0.2	
MW-5	Observation	8/10/2022	6:56	0.00	20.8	0	0.1	0	0	0.0	0.1	Begin injection at MW-1 at 07:08 at 11 cfm
MW-5	Observation	8/10/2022	8:10	0.05	20.7	1	0.1	0	0	0.0	0.2	
MW-5	Observation	8/10/2022	9:21	0.02	20.6	1	0.1	0	0	0.0	0.9	
MW-5	Observation	8/10/2022	10:13	0.00	20.2	1	0.1	0	0	0.0	1.2	
MW-5	Observation	8/10/2022	11:16	0.00	20.3	0	0.1	0	0	0.0	1.0	
MW-5	Observation	8/10/2022	12:50	0.22	19.7	0	0.9	0	0	0.0	0.5	
MW-5	Observation	8/10/2022	14:02	0.28	19.5	0	0.8	0	0	0.0	0.3	
MW-5	Observation	8/10/2022	14:52	0.14	18.1	0	2.1	0	0	0.0	0.6	
MW-5	Observation	8/10/2022	16:01	0.13	19.7	0	1.1	0	0	0.0	1.0	
MW-5	Observation	8/10/2022	16:52	0.25	19.5	0	1.3	0	0	0.0	0.8	
MW-5	Observation	8/10/2022	18:01	0.28	19.0	0	0.7	0	0	0.0	0.3	
MW-5	Observation	8/10/2022	18:50	0.38	19.6	0	0.6	0	0	0.0	0.3	End injection at MW-1 at 19:08 at approximately 10 cfm
MW-5	Observation	8/10/2022	19:32	0.42	20.1	0	0.6	0	0	0.0	0.2	

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/11/2022	6:46	-4.00	20.8	58	0.1	0	0	0.2	101.7	
MW-1	Injection	8/11/2022	19:25	--	21.1	59	0.0	0	0	0.0	1.7	
MW-2	Observation	8/11/2022	6:55	0.00	20.8	1	0.1	0	0	0.0	2.3	Begin injection at MW-1 at 06:58 at 10 cfm
MW-2	Observation	8/11/2022	8:04	0.13	20.5	1	0.2	0	0	0.0	1.2	
MW-2	Observation	8/11/2022	9:13	0.00	19.9	0	0.3	0	0	0.0	0.9	
MW-2	Observation	8/11/2022	10:04	0.04	19.7	1	0.5	0	0	0.0	0.9	
MW-2	Observation	8/11/2022	10:56	0.04	19.6	0	0.6	0	0	0.0	3.3	
MW-2	Observation	8/11/2022	12:05	0.01	18.8	1	1.2	0	0	0.0	1.5	
MW-2	Observation	8/11/2022	12:57	0.05	19.4	0.6	0.1	0	0	0.0	3.7	
MW-2	Observation	8/11/2022	14:04	0.14	18.3	0	1.7	0	0	0.0	1.7	
MW-2	Observation	8/11/2022	15:00	0.16	19.0	0	1.2	0	0	0.0	3.8	
MW-2	Observation	8/11/2022	16:04	0.05	19.7	0	0.5	0	0	0.0	2.4	Lightning and heavy rain 16:05-18:15
MW-2	Observation	8/11/2022	19:22	0.36	19.4	0	1.3	0	0	0.0	0.5	End injection at MW-1 at 19:02 at approximately 10 cfm
MW-3	Observation	8/11/2022	6:50	0.00	20.8	3	0.1	0	0	0.0	2.6	Begin injection at MW-1 at 06:58 at 10 cfm
MW-3	Observation	8/11/2022	8:00	0.20	20.7	1	0.1	0	0	0.0	1.4	
MW-3	Observation	8/11/2022	9:08	0.12	20.3	0	0.1	0	0	0.0	1.1	
MW-3	Observation	8/11/2022	9:59	0.19	20.0	1	0.3	0	0	0.0	2.3	
MW-3	Observation	8/11/2022	10:50	0.19	20.0	1	0.4	0	0	0.0	3.4	
MW-3	Observation	8/11/2022	11:59	0.22	19.5	1	0.6	0	0	0.0	3.7	
MW-3	Observation	8/11/2022	12:52	0.22	19.1	0	0.8	0	0	0.0	3.1	
MW-3	Observation	8/11/2022	13:58	0.24	18.0	1	1.9	0	0	0.0	17.1	
MW-3	Observation	8/11/2022	14:54	0.19	17.6	1	2.8	0	0	0.0	10.7	
MW-3	Observation	8/11/2022	15:58	0.18	15.9	1	4.0	0	0	0.0	2.3	Lightning and heavy rain 16:05-18:15
MW-3	Observation	8/11/2022	19:19	0.28	20.7	0	0.3	0	0	0.0	0.0	End injection at MW-1 at 19:02 at approximately 10 cfm
MW-4	Observation	8/11/2022	6:47	0.00	20.8	8	0.1	0	0	0.0	0.7	Begin injection at MW-1 at 06:58 at 10 cfm
MW-4	Observation	8/11/2022	7:58	0.13	20.7	8	0.1	0	0	0.0	0.5	
MW-4	Observation	8/11/2022	9:05	0.02	20.4	2	0.1	0	0	0.0	0.1	
MW-4	Observation	8/11/2022	9:56	0.06	20.3	0	0.1	0	0	0.0	1.6	
MW-4	Observation	8/11/2022	10:48	0.10	20.4	1	0.1	0	0	0.0	1.4	
MW-4	Observation	8/11/2022	11:56	0.07	20.2	0	0.1	0	0	0.0	0.9	
MW-4	Observation	8/11/2022	12:49	0.04	19.9	0	0.2	0	0	0.0	0.8	
MW-4	Observation	8/11/2022	13:56	0.19	20.3	1	0.3	0	0	0.0	7.5	
MW-4	Observation	8/11/2022	14:51	0.28	19.9	1	0.6	0	0	0.1	5.5	
MW-4	Observation	8/11/2022	15:55	0.14	19.4	0	0.5	0	0	0.0	5.7	Lightning and heavy rain 16:05-18:15
MW-4	Observation	8/11/2022	19:16	0.39	20.6	0	0.5	0	0	0.0	2.5	End injection at MW-1 at 19:02 at approximately 10 cfm
MW-5	Observation	8/11/2022	6:53	0.02	20.8	2	0.1	0	0	0.0	0.6	Begin injection at MW-1 at 06:58 at 10 cfm
MW-5	Observation	8/11/2022	8:03	0.00	20.6	1	0.1	0	0	0.0	1.2	
MW-5	Observation	8/11/2022	9:11	0.00	20.2	0	0.1	0	0	0.0	0.3	
MW-5	Observation	8/11/2022	10:01	0.14	20.2	0	0.1	0	0	0.0	0.2	
MW-5	Observation	8/11/2022	10:53	0.14	20.2	1	0.1	0	0	0.0	0.8	
MW-5	Observation	8/11/2022	12:02	0.04	19.8	0	0.4	0	0	0.0	1.1	
MW-5	Observation	8/11/2022	12:54	0.00	19.3	1	0.8	0	0	0.0	0.7	
MW-5	Observation	8/11/2022	14:01	0.12	19.6	0	0.7	0	0	0.0	1.4	
MW-5	Observation	8/11/2022	14:57	0.18	19.6	0	0.7	0	0	0.0	1.2	
MW-5	Observation	8/11/2022	16:01	0.11	19.3	0	0.7	0	0	0.0	0.1	Lightning and heavy rain 16:05-18:15
MW-5	Observation	8/11/2022	19:21	0.48	20.9	1	0.2	0	0	0.0	0.0	End injection at MW-1 at 19:02 at approximately 10 cfm

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/12/2022	6:59	--	20.8	47	0.1	0	0	0.1	50.9	
MW-1	Injection	8/12/2022	19:34	--	21.1	138	0.0	1	0	0.1	13.7	
MW-2	Observation	8/12/2022	7:15	0.00	20.7	1	0.1	0	0	0.0	0.7	Begin injection at MW-1 at 07:19 at 10 cfm
MW-2	Observation	8/12/2022	8:26	0.20	20.0	1	0.2	0	0	0.0	1.3	
MW-2	Observation	8/12/2022	9:20	0.20	19.5	1	0.4	0	0	0.0	0.6	
MW-2	Observation	8/12/2022	11:05	0.09	19.0	1	0.7	0	0	0.0	6.3	Increase injection rate to 18 cfm at 11:18
MW-2	Observation	8/12/2022	12:13	--	15.4	1	5.6	0	0	0.0	8.3	
MW-2	Observation	8/12/2022	13:05	0.11	18.3	3	1.9	0	0	0.0	2.9	
MW-2	Observation	8/12/2022	13:55	0.38	17.4	8	2.0	0	0	0.0	3.6	
MW-2	Observation	8/12/2022	15:05	0.07	16.0	1	3.7	0	0	0.0	4.5	
MW-2	Observation	8/12/2022	15:56	0.11	17.4	1	2.8	0	0	0.0	1.6	
MW-2	Observation	8/12/2022	17:00	0.20	17.2	1	3.3	0	0	0.0	6.0	
MW-2	Observation	8/12/2022	18:00	0.25	18.2	1	2.0	0	0	0.0	3.0	
MW-2	Observation	8/12/2022	18:56	0.34	18.7	1	1.7	0	0	0.0	1.2	End injection at MW-1 at 19:02 at approximately 17 cfm
MW-2	Observation	8/12/2022	19:30	0.39	20.1	1	0.6	0	0	0.0	2.6	
MW-3	Observation	8/12/2022	7:09	0.00	20.6	2	0.3	0	0	0.0	1.2	Begin injection at MW-1 at 07:19 at 10 cfm
MW-3	Observation	8/12/2022	8:21	0.00	19.5	1	1.1	0	0	0.0	0.8	
MW-3	Observation	8/12/2022	9:14	0.00	18.6	1	1.6	0	0	0.0	2.2	
MW-3	Observation	8/12/2022	10:58	0.10	16.0	1	5.6	0	0	0.0	1.1	Increase injection rate to 18 cfm at 11:18
MW-3	Observation	8/12/2022	12:06	--	11.5	7.2	6.9	0	0	0.0	2.1	
MW-3	Observation	8/12/2022	13:00	0.10	13.4	1	5.6	0	0	0.0	2.2	
MW-3	Observation	8/12/2022	13:48	0.16	12.1	1	6.3	0	0	0.0	4.7	
MW-3	Observation	8/12/2022	15:00	0.10	13.1	2	4.3	0	0	0.0	5.4	
MW-3	Observation	8/12/2022	15:51	0.14	12.6	1	6.3	0	0	0.0	1.7	
MW-3	Observation	8/12/2022	16:55	0.12	12.1	0	6.7	0	0	0.0	3.7	
MW-3	Observation	8/12/2022	17:55	0.12	12.0	1	4.4	0	0	0.0	1.9	
MW-3	Observation	8/12/2022	18:51	0.09	13.5	1	5.8	0	0	0.0	0.8	End injection at MW-1 at 19:02 at approximately 17 cfm
MW-3	Observation	8/12/2022	19:25	0.07	20.3	1	0.3	0	0	0.0	0.4	
MW-4	Observation	8/12/2022	7:05	0.02	20.8	3	0.1	0	0	0.0	0.2	Begin injection at MW-1 at 07:19 at 10 cfm
MW-4	Observation	8/12/2022	8:18	0.00	20.5	1	0.1	0	0	0.0	0.5	
MW-4	Observation	8/12/2022	9:12	0.09	20.3	1	0.1	0	0	0.0	0.4	
MW-4	Observation	8/12/2022	10:56	0.16	20.1	1	0.1	0	0	0.0	2.5	Increase injection rate to 18 cfm at 11:18
MW-4	Observation	8/12/2022	12:02	0.30	20.0	0	0.1	0	0	0.0	11.5	
MW-4	Observation	8/12/2022	12:57	0.30	20.8	1	0.3	0	0	0.0	1.6	
MW-4	Observation	8/12/2022	13:45	0.40	19.7	2	0.5	0	0	0.0	3.1	
MW-4	Observation	8/12/2022	14:57	0.26	19.6	1	0.7	0	0	0.1	2.6	
MW-4	Observation	8/12/2022	15:49	0.22	19.7	1	0.6	0	0	0.0	1.8	
MW-4	Observation	8/12/2022	16:52	0.28	19.7	0	1.0	0	0	0.0	2.2	
MW-4	Observation	8/12/2022	17:53	0.29	18.4	1	2.0	0	0	0.1	2.9	
MW-4	Observation	8/12/2022	18:47	0.21	19.8	1	1.0	0	0	0.1	1.6	End injection at MW-1 at 19:02 at approximately 17 cfm
MW-4	Observation	8/12/2022	19:23	0.02	20.5	1	0.5	0	0	0.0	1.4	
MW-5	Observation	8/12/2022	7:12	0.04	20.8	0	0.1	0	0	0.0	0.3	Begin injection at MW-1 at 07:19 at 10 cfm
MW-5	Observation	8/12/2022	8:24	0.00	20.2	1	0.1	0	0	0.0	0.8	
MW-5	Observation	8/12/2022	9:17	0.18	19.6	1	0.2	0	0	0.0	0.7	
MW-5	Observation	8/12/2022	11:02	0.00	19.8	2	0.1	0	0	0.0	3.6	Increase injection rate to 18 cfm at 11:18
MW-5	Observation	8/12/2022	12:10	--	19.9	1	0.6	0	0	0.0	2.5	
MW-5	Observation	8/12/2022	13:03	0.00	19.9	1	0.7	0	0	0.0	1.5	
MW-5	Observation	8/12/2022	13:51	0.10	13.2	1	1.3	0	0	0.0	1.6	
MW-5	Observation	8/12/2022	15:03	0.15	18.4	1	1.7	0	0	0.0	3.1	
MW-5	Observation	8/12/2022	15:54	0.16	18.8	1	1.5	0	0	0.0	3.8	
MW-5	Observation	8/12/2022	16:58	0.25	19.7	1	0.5	0	0	0.0	1.2	
MW-5	Observation	8/12/2022	17:57	0.24	19.3	1	0.5	0	0	0.0	2.2	
MW-5	Observation	8/12/2022	18:54	0.36	18.9	0	0.7	0	0	0.0	3.9	End injection at MW-1 at 19:02 at approximately 17 cfm
MW-5	Observation	8/12/2022	19:27	0.58	20.7	1	0.3	0	0	0.0	1.1	

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/13/2022	6:53	--	18.5	135	0.1	1	0	0.1	47.0	
MW-1	Injection	8/13/2022	19:39	--	20.8	42	0.0	0	0	0.1	15.4	
MW-2	Observation	8/13/2022	7:01	0.00	20.6	1	0.1	0	0	0.0	0.7	Begin injection at MW-1 at 07:14 at 18 cfm
MW-2	Observation	8/13/2022	8:12	0.09	20.1	1	0.1	0	0	0.0	2.9	
MW-2	Observation	8/13/2022	9:11	0.00	19.6	1	0.2	0	0	0.0	8.7	
MW-2	Observation	8/13/2022	10:23	0.00	17.9	1	1.9	0	0	0.0	5.6	
MW-2	Observation	8/13/2022	11:07	0.00	17.4	4	2.9	0	0	0.0	11.5	
MW-2	Observation	8/13/2022	12:25	0.04	17.0	1	2.2	0	0	0.0	11.0	
MW-2	Observation	8/13/2022	13:07	0.02	15.5	2	4.0	0	0	0.0	4.5	
MW-2	Observation	8/13/2022	14:25	0.16	16.6	2	3.1	0	0	0.0	15.8	
MW-2	Observation	8/13/2022	15:10	0.10	17.9	1	1.3	0	0	0.0	2.5	
MW-2	Observation	8/13/2022	16:23	0.19	14.0	4	5.2	0	0	0.0	4.0	
MW-2	Observation	8/13/2022	17:08	0.18	13.6	4	5.1	0	0	0.0	21.8	
MW-2	Observation	8/13/2022	18:03	0.19	16.7	3	2.2	0	0	0.1	4.4	
MW-2	Observation	8/13/2022	19:03	0.30	15.4	4	4.1	0	0	0.0	5.1	End injection at MW-1 at 19:08 approximately 18 cfm
MW-2	Observation	8/13/2022	19:35	0.38	19.6	1	0.8	0	0	0.0	6.0	
MW-3	Observation	8/13/2022	6:57	0.05	20.6	3	0.1	0	0	0.0	0.8	Begin injection at MW-1 at 07:14 at 18 cfm
MW-3	Observation	8/13/2022	8:07	0.08	14.3	1	6.1	0	0	0.0	0.7	
MW-3	Observation	8/13/2022	9:07	0.07	12.1	1	7.3	0	0	0.0	2.6	
MW-3	Observation	8/13/2022	10:17	0.08	11.2	1	7.3	0	0	0.0	5.1	
MW-3	Observation	8/13/2022	11:02	0.08	11.6	0	7.1	0	0	0.0	1.1	
MW-3	Observation	8/13/2022	12:20	0.13	12.1	1	5.7	0	0	0.0	1.7	
MW-3	Observation	8/13/2022	13:02	0.09	11.8	1	6.6	0	0	0.0	2.2	
MW-3	Observation	8/13/2022	14:19	0.09	10.3	1	7.0	0	0	0.0	4.8	
MW-3	Observation	8/13/2022	15:04	0.10	11.0	1	6.4	0	0	0.0	6.4	
MW-3	Observation	8/13/2022	16:18	0.09	10.8	1	6.9	0	0	0.1	7.5	
MW-3	Observation	8/13/2022	17:03	0.11	11.6	1	6.5	0	0	0.1	7.3	
MW-3	Observation	8/13/2022	17:58	0.08	9.8	2	7.5	0	0	0.1	7.0	
MW-3	Observation	8/13/2022	18:58	0.09	15.8	2	4.3	0	0	0.1	3.1	End injection at MW-1 at 19:08 approximately 18 cfm
MW-3	Observation	8/13/2022	19:30	0.09	19.6	0	0.8	0	0	0.1	0.3	
MW-4	Observation	8/13/2022	6:55	0.11	20.6	5	0.1	0	0	0.0	0.1	Begin injection at MW-1 at 07:14 at 18 cfm
MW-4	Observation	8/13/2022	8:05	0.10	20.4	1	0.1	0	0	0.0	0.6	
MW-4	Observation	8/13/2022	9:03	0.10	20.1	1	0.1	0	0	0.0	5.7	
MW-4	Observation	8/13/2022	10:15	0.18	19.9	1	0.1	0	0	0.0	12.5	
MW-4	Observation	8/13/2022	10:59	0.20	20.1	0	0.1	0	0	0.0	7.1	
MW-4	Observation	8/13/2022	12:17	0.23	19.8	0	0.1	0	0	0.0	12.9	
MW-4	Observation	8/13/2022	12:59	0.22	19.8	1	0.1	0	0	0.0	9.8	
MW-4	Observation	8/13/2022	14:16	0.29	19.8	0	0.2	0	0	0.0	2.3	
MW-4	Observation	8/13/2022	15:01	0.21	19.1	2	0.7	0	0	0.0	6.7	
MW-4	Observation	8/13/2022	16:15	0.24	18.7	2	1.5	0	0	0.1	18.0	
MW-4	Observation	8/13/2022	17:00	0.31	19.3	1	1.1	0	0	0.1	9.9	
MW-4	Observation	8/13/2022	17:56	0.21	19.2	1	1.1	0	0	0.1	5.4	
MW-4	Observation	8/13/2022	18:55	0.32	19.1	1	1.1	0	0	0.1	3.9	End injection at MW-1 at 19:08 approximately 18 cfm
MW-4	Observation	8/13/2022	19:28	0.29	20.3	0	0.1	0	0	0.1	0.6	
MW-5	Observation	8/13/2022	6:59	0.00	20.6	2	0.1	0	0	0.0	0.7	Begin injection at MW-1 at 07:14 at 18 cfm
MW-5	Observation	8/13/2022	8:10	0.00	18.9	1	0.1	0	0	0.0	1.1	
MW-5	Observation	8/13/2022	9:09	0.00	18.6	2	0.1	0	0	0.0	4.6	
MW-5	Observation	8/13/2022	10:20	0.00	18.7	1	0.1	0	0	0.0	3.3	
MW-5	Observation	8/13/2022	11:04	0.00	18.5	1	0.4	0	0	0.0	1.0	
MW-5	Observation	8/13/2022	12:22	0.00	18.3	1	0.5	0	0	0.0	0.8	
MW-5	Observation	8/13/2022	13:04	0.00	17.7	0	1.4	0	0	0.0	3.9	
MW-5	Observation	8/13/2022	14:22	0.00	18.6	0	0.7	0	0	0.0	3.7	
MW-5	Observation	8/13/2022	15:07	0.00	18.4	1	0.7	0	0	0.0	3.0	
MW-5	Observation	8/13/2022	16:20	0.04	18.0	1	1.0	0	0	0.0	1.6	
MW-5	Observation	8/13/2022	17:06	0.09	16.9	1	1.2	0	0	0.0	3.9	
MW-5	Observation	8/13/2022	18:02	0.10	17.3	2	1.3	0	0	0.1	1.6	
MW-5	Observation	8/13/2022	19:01	0.18	18.8	1	0.6	0	0	0.0	0.7	End injection at MW-1 at 19:08 approximately 18 cfm
MW-5	Observation	8/13/2022	19:33	0.21	20.1	0	0.6	0	0	0.1	2.2	

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Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/14/2022	7:20	--	20.0	16	0.1	0	0	0.0	119.7	
MW-1	Injection	8/14/2022	20:07	--	20.4	133	0.0	1	0	0.1	8.2	
MW-2	Observation	8/14/2022	7:18	0.00	20.0	1	0.1	0	0	0.0	1.9	Begin injection at MW-1 at 07:35 at 18 cfm
MW-2	Observation	8/14/2022	8:42	0.11	19.6	4	0.2	0	0	0.0	7.4	
MW-2	Observation	8/14/2022	9:22	0.16	18.4	4	1.2	0	0	0.0	6.9	
MW-2	Observation	8/14/2022	10:39	0.06	15.2	6	4.7	0	0	0.0	6.7	
MW-2	Observation	8/14/2022	11:22	0.08	15.7	6	3.9	0	0	0.0	3.5	
MW-2	Observation	8/14/2022	12:39	0.19	14.1	11	5.7	0	0	0.0	5.6	
MW-2	Observation	8/14/2022	13:22	0.26	14.2	15	6.4	0	0	0.0	8.5	
MW-2	Observation	8/14/2022	14:37	0.11	11.2	17	7.7	0	0	0.0	7.4	
MW-2	Observation	8/14/2022	15:21	0.06	15.4	13	4.6	0	5	0.0	4.0	
MW-2	Observation	8/14/2022	17:24	0.22	19.0	4	1.1	0	--	0.0	5.5	
MW-2	Observation	8/14/2022	16:38	0.13	18.5	6	1.5	0	0	0.0	7.4	
MW-2	Observation	8/14/2022	18:39	0.28	17.7	9	2.3	0	6	0.1	2.6	
MW-2	Observation	8/14/2022	19:21	0.40	15.6	14	4.1	0	0	0.1	7.1	End injection at MW-1 at 19:32 at approximately 18 cfm
MW-2	Observation	8/14/2022	19:59	0.39	19.0	12	3.0	0	0	0.1	1.2	
MW-3	Observation	8/14/2022	7:13	0.02	20.0	0	0.1	0	0	0.0	0.3	Begin injection at MW-1 at 07:35 at 18 cfm
MW-3	Observation	8/14/2022	8:35	0.08	11.2	1	7.4	0	0	0.0	3.5	
MW-3	Observation	8/14/2022	9:16	0.06	12.0	1	7.8	0	0	0.0	4.7	
MW-3	Observation	8/14/2022	10:32	0.08	10.3	1	7.8	0	0	0.0	5.1	
MW-3	Observation	8/14/2022	11:18	0.07	11.9	1	7.3	0	0	0.0	4.7	
MW-3	Observation	8/14/2022	12:34	0.07	9.9	2	7.5	0	0	0.0	5.1	
MW-3	Observation	8/14/2022	13:18	0.06	10.7	2	7.2	0	0	0.0	5.4	
MW-3	Observation	8/14/2022	14:32	0.08	14.5	2	6.4	0	0	0.0	3.0	
MW-3	Observation	8/14/2022	15:16	0.10	12.0	3	6.8	0	0	0.0	3.5	
MW-3	Observation	8/14/2022	16:33	0.08	11.0	3	7.4	0	4	0.1	6.1	
MW-3	Observation	8/14/2022	17:18	0.09	16.1	3	4.3	0	3	0.1	5.7	
MW-3	Observation	8/14/2022	18:33	0.08	15.7	4	4.6	0	1	0.1	5.8	
MW-3	Observation	8/14/2022	19:17	0.09	13.0	4	6.4	0	1	0.1	6.4	End injection at MW-1 at 19:32 at approximately 18 cfm
MW-3	Observation	8/14/2022	19:55	0.05	18.8	2	2.0	0	0	0.1	1.5	
MW-4	Observation	8/14/2022	7:11	0.00	19.0	1	0.1	1	0	0.0	1.0	Begin injection at MW-1 at 07:35 at 18 cfm
MW-4	Observation	8/14/2022	8:33	0.09	20.3	2	0.1	0	0	0.0	2.8	
MW-4	Observation	8/14/2022	9:13	0.14	19.5	1	0.8	0	0	0.0	1.7	
MW-4	Observation	8/14/2022	10:29	0.14	15.7	0	3.7	0	0	0.0	0.5	
MW-4	Observation	8/14/2022	11:15	0.18	17.7	1	1.7	0	0	0.0	1.5	
MW-4	Observation	8/14/2022	12:31	0.22	17.1	1	2.7	0	0	0.0	1.2	
MW-4	Observation	8/14/2022	13:16	0.21	17.0	1	2.7	0	0	0.0	0.2	
MW-4	Observation	8/14/2022	14:30	0.12	18.6	1	1.4	0	0	0.0	0.4	
MW-4	Observation	8/14/2022	15:14	0.19	16.7	1	2.9	0	0	0.0	0.5	
MW-4	Observation	8/14/2022	16:30	0.16	17.0	0	2.7	0	4	0.1	2.6	
MW-4	Observation	8/14/2022	17:15	0.20	19.4	1	0.8	0	1	0.1	1.5	
MW-4	Observation	8/14/2022	18:30	0.19	18.9	1	1.1	0	1	0.1	1.2	
MW-4	Observation	8/14/2022	19:15	0.17	17.8	1	2.4	0	1	0.1	0.9	End injection at MW-1 at 19:32 at approximately 18 cfm
MW-4	Observation	8/14/2022	19:52	0.09	19.8	1	0.9	0	0	0.1	0.7	
MW-5	Observation	8/14/2022	7:16	0.01	20.0	0	0.1	0	0	0.0	1.0	Begin injection at MW-1 at 07:35 at 18 cfm
MW-5	Observation	8/14/2022	8:40	0.00	17.8	1	0.4	0	0	0.0	2.2	
MW-5	Observation	8/14/2022	9:19	0.00	17.2	1	0.7	0	0	0.0	3.2	
MW-5	Observation	8/14/2022	10:35	0.00	17.3	1	1.3	0	0	0.0	0.4	
MW-5	Observation	8/14/2022	11:20	0.00	16.8	0	1.6	0	0	0.0	2.0	
MW-5	Observation	8/14/2022	12:36	0.06	17.6	2	0.8	0	0	0.0	0.6	
MW-5	Observation	8/14/2022	13:20	0.10	17.8	1	0.8	0	0	0.0	0.3	
MW-5	Observation	8/14/2022	14:35	0.01	17.2	1	1.0	0	0	0.0	0.1	
MW-5	Observation	8/14/2022	15:19	0.02	17.2	1	1.1	0	0	0.0	0.9	
MW-5	Observation	8/14/2022	16:36	0.02	18.1	5	0.7	0	1	0.0	2.1	
MW-5	Observation	8/14/2022	17:20	0.08	18.1	1	0.5	0	0	0.1	0.5	
MW-5	Observation	8/14/2022	18:37	0.18	17.8	0	0.7	0	1	0.1	1.2	
MW-5	Observation	8/14/2022	19:19	0.21	16.9	1	1.2	0	0	0.1	1.0	End injection at MW-1 at 19:32 at approximately 18 cfm
MW-5	Observation	8/14/2022	19:57	0.20	20.1	1	1.0	0	0	0.1	1.7	

Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection	8/15/2022	7:17	--	20.1	148	0.1	0	0	0.0	67.2	Begin injection at MW-1 at 07:23 at 18 cfm
MW-1	Injection	8/15/2022	11:48	--	19.8	95	0.0	1	0	0.0	16.7	End injection at MW-1 at 11:43
MW-1	Injection	8/15/2022	12:45	--	19.2	56	0.0	0	0	0.0	24.7	
MW-1	Injection	8/15/2022	13:46	--	20.5	53	0.0	0	0	0.1	57.0	
MW-1	Injection	8/15/2022	14:45	--	19.7	45	0.0	0	0	0.1	177.2	
MW-1	Injection	8/15/2022	15:45	--	20.0	37	0.0	0	0	0.1	224.9	
MW-1	Injection	8/15/2022	16:48	--	20.5	32	0.0	0	0	0.1	171.6	
MW-1	Injection	8/15/2022	17:45	--	20.5	40	0.0	0	0	0.2	251.0	
MW-1	Injection	8/15/2022	18:50	--	20.5	42	0.0	0	0	0.1	--	
MW-2	Observation	8/15/2022	7:15	0.01	20.2	0	0.1	0	0	0.0	2.7	Begin injection at MW-1 at 07:23 at 18 cfm
MW-2	Observation	8/15/2022	8:37	0.00	19.9	1	0.1	0	0	0.0	3.0	
MW-2	Observation	8/15/2022	9:40	0.00	--	--	--	--	0	--	4.3	
MW-2	Observation	8/15/2022	10:48	0.02	15.8	11	4.7	0	0	0.0	3.7	
MW-2	Observation	8/15/2022	11:23	0.20	18.8	6	2.4	0	0	1.2	4.7	End injection at MW-1 at 11:43 at approximately 18 cfm
MW-2	Observation	8/15/2022	12:23	0.13	18.9	4	1.0	0	0	0.0	2.4	
MW-3	Observation	8/15/2022	7:11	0.03	20.1	0	0.1	0	0	0.0	0.5	Begin injection at MW-1 at 07:23 at 18 cfm
MW-3	Observation	8/15/2022	8:33	0.04	15.1	1	6.3	0	0	0.0	0.7	
MW-3	Observation	8/15/2022	9:18	0.06	13.1	2	8.2	0	0	0.0	4.9	
MW-3	Observation	8/15/2022	10:40	0.05	17.4	1	2.8	0	0	0.0	4.2	
MW-3	Observation	8/15/2022	11:16	0.06	15.2	2	6.7	0	0	0.0	5.3	End injection at MW-1 at 11:43 at approximately 18 cfm
MW-3	Observation	8/15/2022	12:19	0.06	17.7	1	2.6	0	0	0.0	1.9	
MW-4	Observation	8/15/2022	7:08	0.00	15.8	0	0.1	1	0	0.0	0.5	Begin injection at MW-1 at 07:23 at 18 cfm
MW-4	Observation	8/15/2022	8:30	0.00	20.3	1	0.1	0	0	0.0	0.9	
MW-4	Observation	8/15/2022	9:15	0.00	20.1	0	0.1	0	0	0.0	3.3	
MW-4	Observation	8/15/2022	10:29	0.08	20.4	1	--	0	0	0.0	1.4	
MW-4	Observation	8/15/2022	11:13	0.19	19.6	1	0.0	0	0	0.0	2.6	End injection at MW-1 at 11:43 at approximately 18 cfm
MW-4	Observation	8/15/2022	12:17	0.12	20.2	1	0.1	0	0	0.0	0.6	
MW-5	Observation	8/15/2022	7:13	0.00	20.2	0	0.1	0	0	0.0	0.3	Begin injection at MW-1 at 07:23 at 18 cfm
MW-5	Observation	8/15/2022	8:35	0.00	18.2	2	0.1	0	0	0.0	0.9	
MW-5	Observation	8/15/2022	9:20	0.00	--	--	--	--	0	--	1.3	
MW-5	Observation	8/15/2022	10:44	0.00	15.3	--	--	--	0	0.0	0.6	
MW-5	Observation	8/15/2022	11:20	0.00	19.9	7	0.3	0	0	0.0	0.1	End injection at MW-1 at 11:43 at approximately 18 cfm
MW-5	Observation	8/15/2022	12:21	0.01	17.9	1	0.4	0	0	0.0	1.5	

**Table 2: Pressure and Soil Gas Measurements, Bioventing Pilot Test  
Post Injection: August 18, 2022  
Holly Energy Partners - Operating, L.P., WTX to EMSU Battery Release Site**

Well	Type	Date	Time	Pressure (in. W.C.)	O <sub>2</sub> (%)	CO (ppm)	CO <sub>2</sub> (%)	H <sub>2</sub> S (ppm)	LEL (%)	Methane (%)	VOCs (ppm)	Notes
MW-1	Injection*	8/18/2022	10:17	--	20.6	0	0.1	0	--	0.0	--	Soil gas oxygen level anomalously high and not used for in-situ respirometry test
MW-1	Injection*	8/18/2022	10:55	--	18.4	6	1.3	1	--	0.0	--	

Notes:

\* Seven-day bioventing pilot test was conducted from August 9 to 15, 2022. Additional measurements were collected from injection well MW-1 on August 18, 2022 for in-situ respirometry test.

cfm cubic feet per minute

CO carbon monoxide

CO<sub>2</sub> carbon dioxide

in W.C. inches of water column

LEL lower explosive limit

O<sub>2</sub> oxygen

ppm parts per million

VOCs volatile organic compounds

-- measurement not recorded

% percent

Highlighted pink results recorded when injection test not active.

**Table 3: Summary of In-Situ Respirometry Test Results, Bioventing Pilot Test  
August 15 and 18, 2022  
Holly Energy Partners - Operating, L.P.  
WTX to EMSU Battery Release Site**

Hydrocarbon Biodegradation rate using oxygen data from respirometry testing

$$K_B = -\frac{K_O A D_O C}{100}$$

where:

$K_B$  = biodegradation rate (mg of hydrocarbon/kg of soil/day)

$K_O$  = oxygen uptake rate (percent per day)

$A$  = volume of air/kg soil (L/kg) = 0.3 (approx.)

$D_O$  = density of oxygen gas (mg/L) = 1,330 mg/L

$C$  = mass ratio of hydrocarbon to oxygen = 1/3.5

**Bioventing Pilot Test, WTX to EMSU Battery Release Site, Lea County, New Mexico**

Well ID	O <sub>2</sub> uptake %/day	K <sub>mg/kg/day</sub> Average
MW-1	0.79	0.90
average =		0.90

mg/kg/day

WTX to EMSU Pilot Test = **125** gal/acre/year

Notes:

gal/acre/year gallons of hydrocarbon per acre per year

mg milligram

mg/kg/day mg of hydrocarbon per kg of soil per day

O<sub>2</sub> Oxygen

Method from Newell et al. (2016)

In-situ respirometry test commenced immediately following bioventing pilot test on August 15, 2022.

**APPENDIX A**  
**COPIES OF E-MAIL CORRESPONDENCE**

**Stoffel, Jared**

---

**From:** Hensley, Chad, EMNRD <Chad.Hensley@state.nm.us>  
**Sent:** Tuesday, April 5, 2022 4:42 PM  
**To:** Stoffel, Jared; Bratcher, Mike, EMNRD  
**Cc:** Gilbert, Bryan; Sahba, Arsin M.; Melanie Nolan; Trevor.baird; mark.shemaria; Clark, Darija; Helbert, Dana; Hoover, Shannon; Varnell, Richard  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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**Flag Status:** Flagged

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Jared,

The OCD approves this workplan. Please proceed with the project.

Cheers,

**Chad Hensley** • Environmental Science & Specialist  
 Environmental Bureau  
 EMNRD - Oil Conservation Division  
 811 First St. | Artesia, NM 88210  
 Office: 575.748.1283 | Cell: 575-703-1723  
[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)  
<http://www.emnrd.state.nm.us/OCD/>




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**Sent:** Friday, April 1, 2022 2:59 PM  
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**Cc:** Gilbert, Bryan <BGilbert@trccompanies.com>; Sahba, Arsin M. <arsin.sahba@hollyfrontier.com>; Melanie Nolan <melanie.nolan@hollyenergy.com>; Trevor.baird <Trevor.baird@hollyenergy.com>; mark.shemaria <mark.shemaria@hollyenergy.com>; Clark, Darija <dclark@trccompanies.com>; Helbert, Dana <DHelbert@trccompanies.com>; Hoover, Shannon <SHoover@trccompanies.com>; Varnell, Richard <RVarnell@trccompanies.com>

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Thank you.

**Jared Stoffel, P.G.**  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752  
F: 512 329 8750 | C: 432 238 3003  
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](#)

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Jared,

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**Chad Hensley** • Environmental Science & Specialist  
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 EMNRD - Oil Conservation Division  
 811 First St. | Artesia, NM 88210  
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[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)  
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Chad,

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Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](http://TRCcompanies.com)

**Stoffel, Jared**

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**Sent:** Monday, August 1, 2022 11:29 AM  
**To:** Nobui, Jennifer, EMNRD; Billings, Bradford, EMNRD; mike.bratcher@state.nm.us  
**Cc:** Gilbert, Bryan; Sahba, Arsin M.; Melanie Nolan; Trevor.baird; Clark, Darija; Helbert, Dana; Hoover, Shannon; Varnell, Richard  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,  
I would like to submit a notification that the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities are all scheduled to begin this week on August 3, 2022. The activities are projected to be completed within 2 weeks. This email is intended to notify you of both the remedial and monitoring activities occurring onsite and the collection of final samples from the remedial excavation during this time period in accordance with NMAC 19.15.29.12 D(1)(a). Please let me know if there are any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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Project Manager



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**Sent:** Friday, August 12, 2022 1:49 PM  
**To:** Billings, Bradford, EMNRD; Nobui, Jennifer, EMNRD; mike.bratcher@state.nm.us  
**Cc:** Sahba, Arsin; Trevor.baird; Melanie Nolan; Clark, Darija; Gilbert, Bryan; Hoover, Shannon; Helbert, Dana; Varnell, Richard  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to follow up on our notification of the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities with an updated timeline. Field activities were projected to be completed by August 12. An updated timeline is provided below.

- Bioventing Pilot Test - Field activities began on August 3, 2022, but the pilot test did not commence until August 9 (Day 1) due to equipment issues and troubleshooting. The pilot test is anticipated to be complete on August 15 (Day 7).
- Soil Boring – Drilling was originally scheduled for August 8. Due to a change in drill rig availability (the drill rig scheduled for the work was not operational), drilling is now scheduled for August 15.
- Quarterly Groundwater Monitoring – Due to the revised bioventing pilot test schedule (the monitoring wells cannot be gauged and sampled during the pilot test), quarterly groundwater monitoring activities are scheduled to begin August 16. This is a slight deviation from the schedule presented in the April 2022 Remediation Work Plan Addendum, which indicated quarterly groundwater monitoring would commence within 90 days of NMOCD approval of the Work Plan (i.e., August 13). Groundwater monitoring activities are expected to take 1 – 2 days.
- Remedial Excavation and Sampling – Due to the revised bioventing pilot test and quarterly groundwater monitoring schedules, remedial excavation and sampling activities are scheduled for August 17 to 19.

Please let me know if you have any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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**From:** Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>  
**Sent:** Thursday, August 4, 2022 11:48 AM  
**To:** Stoffel, Jared <JStoffel@trccompanies.com>  
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Hi,

Thank you for notification. Please keep this communication and include in allied report(s).

Bradford Billings  
EMNRD/OCD

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**Sent:** Monday, August 1, 2022 10:29 AM

**To:** Nobui, Jennifer, EMNRD <[Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us)>; Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>

**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to submit a notification that the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities are all scheduled to begin this week on August 3, 2022. The activities are projected to be completed within 2 weeks. This email is intended to notify you of both the remedial and monitoring activities occurring onsite and the collection of final samples from the remedial excavation during this time period in accordance with NMAC 19.15.29.12 D(1)(a). Please let me know if there are any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752

F: 512 329 8750 | C: 432 238 3003

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---

**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>

**Sent:** Thursday, April 7, 2022 8:16 AM

**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; mark.shemaria <[mark.shemaria@hollyenergy.com](mailto:mark.shemaria@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>

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Jared,

Good morning. The approval is for UIC and the remediation.

Cheers,

**Chad Hensley** • Environmental Science & Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

811 First St. | Artesia, NM 88210

Office: 575.748.1283 | Cell: 575-703-1723

[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)

<http://www.emnrd.state.nm.us/OCD/>



---

**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>

**Sent:** Wednesday, April 6, 2022 3:42 PM

**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

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**Jared Stoffel, P.G.**  
Project Manager



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**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>  
**Sent:** Tuesday, April 5, 2022 4:42 PM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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Jared,

The OCD approves this workplan. Please proceed with the project.

Cheers,

**Chad Hensley** • Environmental Science & Specialist  
Environmental Bureau  
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811 First St. | Artesia, NM 88210  
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<http://www.emnrd.state.nm.us/OCD/>



**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Friday, April 1, 2022 2:59 PM  
**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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<RVarnell@trccompanies.com>

**Subject:** [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mr. Hensley and Mr. Bratcher,

Please see the attached addendum to the NMOCD-approved November 12, 2021, *Site Characterization Report and Remediation Workplan* for the WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release Site (NOY1822242858). Included in the appendices are the requested C-108 form and associated federal underground injection form. Please let us know if you require any additional information. Otherwise we will stand by for NMOCD's approval of the Remediation Workplan Addendum and the authorization to inject.

Thank you.

**Jared Stoffel, P.G.**  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752

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**Stoffel, Jennifer R.**

---

**From:** Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>  
**Sent:** Monday, August 15, 2022 12:20 PM  
**To:** Stoffel, Jared  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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Hello,

Thank you for the notification. Please keep this communication and include in allied report(s)

Bradford Billings  
EMNRD/OCD

---

**From:** Stoffel, Jared <JStoffel@trccompanies.com>  
**Sent:** Friday, August 12, 2022 12:49 PM  
**To:** Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>  
**Cc:** Sahba, Arsin <Arsin.Sahba@HFSinclair.com>; Trevor.baird <Trevor.baird@hollyenergy.com>; Melanie Nolan <melanie.nolan@hollyenergy.com>; Clark, Darija <dclark@trccompanies.com>; Gilbert, Bryan <BGilbert@trccompanies.com>; Hoover, Shannon <SHoover@trccompanies.com>; Helbert, Dana <DHelbert@trccompanies.com>; Varnell, Richard <RVarnell@trccompanies.com>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to follow up on our notification of the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities with an updated timeline. Field activities were projected to be completed by August 12. An updated timeline is provided below.

- Bioventing Pilot Test - Field activities began on August 3, 2022, but the pilot test did not commence until August 9 (Day 1) due to equipment issues and troubleshooting. The pilot test is anticipated to be complete on August 15 (Day 7).
- Soil Boring – Drilling was originally scheduled for August 8. Due to a change in drill rig availability (the drill rig scheduled for the work was not operational), drilling is now scheduled for August 15.
- Quarterly Groundwater Monitoring – Due to the revised bioventing pilot test schedule (the monitoring wells cannot be gauged and sampled during the pilot test), quarterly groundwater monitoring activities are scheduled to begin August 16. This is a slight deviation from the schedule presented in the April 2022 Remediation Work Plan Addendum, which indicated quarterly groundwater monitoring would commence within 90 days of NMOCD approval of the Work Plan (i.e., August 13). Groundwater monitoring activities are expected to take 1 – 2 days.

- Remedial Excavation and Sampling – Due to the revised bioventing pilot test and quarterly groundwater monitoring schedules, remedial excavation and sampling activities are scheduled for August 17 to 19.

Please let me know if you have any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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---

**From:** Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>  
**Sent:** Thursday, August 4, 2022 11:48 AM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
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**Sent:** Thursday, April 7, 2022 8:16 AM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Wednesday, April 6, 2022 3:42 PM

**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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EMNRD - Oil Conservation Division

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**Jared Stoffel, P.G.**  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752

F: 512 329 8750 | C: 432 238 3003

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## Stoffel, Jared

---

**From:** Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>  
**Sent:** Wednesday, August 17, 2022 1:59 PM  
**To:** Stoffel, Jared; Billings, Bradford, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** Sahba, Arsin; Trevor.baird; Melanie Nolan; Clark, Darija; Gilbert, Bryan; Hoover, Shannon; Helbert, Dana; Varnell, Richard; Hamlet, Robert, EMNRD; Harimon, Jocelyn, EMNRD  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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Thank you Jared for the notification.

Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

Please let us know if you encounter any delays or have any questions.

Thanks,  
Jennifer Nobui

---

**From:** Stoffel, Jared <JStoffel@trccompanies.com>  
**Sent:** Friday, August 12, 2022 12:49 PM  
**To:** Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>  
**Cc:** Sahba, Arsin <Arsin.Sahba@HFSinclair.com>; Trevor.baird <Trevor.baird@hollyenergy.com>; Melanie Nolan <melanie.nolan@hollyenergy.com>; Clark, Darija <dclark@trccompanies.com>; Gilbert, Bryan <BGilbert@trccompanies.com>; Hoover, Shannon <SHoover@trccompanies.com>; Helbert, Dana <DHelbert@trccompanies.com>; Varnell, Richard <RVarnell@trccompanies.com>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to follow up on our notification of the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities with an updated timeline. Field activities were projected to be completed by August 12. An updated timeline is provided below.

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Please let me know if you have any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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Hi,

Thank you for notification. Please keep this communication and include in allied report(s).

Bradford Billings  
EMNRD/OCD

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**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Monday, August 1, 2022 10:29 AM  
**To:** Nobui, Jennifer, EMNRD <[Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us)>; Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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Project Manager



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**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>  
**Sent:** Thursday, April 7, 2022 8:16 AM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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Jared,

Good morning. The approval is for UIC and the remediation.

Cheers,

**Chad Hensley** • Environmental Science & Specialist  
Environmental Bureau  
EMNRD - Oil Conservation Division  
811 First St. | Artesia, NM 88210  
Office: 575.748.1283 | Cell: 575-703-1723  
[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)  
<http://www.emnrd.state.nm.us/OCD/>



---

**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Wednesday, April 6, 2022 3:42 PM  
**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; mark.shemaria <[mark.shemaria@hollyenergy.com](mailto:mark.shemaria@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

Chad,

We would like to clarify if this also includes the approval of the injection permits, or if that come separately from the Underground Injection group? Pending approval of the injection permits, as needed, we will proceed with field work following the completion of calving season as requested by the landowner. We will notify you when calving season has completed and the landowner has given us permission to access the property. Thank you very much for the approval to proceed and the additional clarification with regards to the injection permitting process.

**Jared Stoffel, P.G.**  
Project Manager



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**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>  
**Sent:** Tuesday, April 5, 2022 4:42 PM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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Jared,

The OCD approves this workplan. Please proceed with the project.

Cheers,

**Chad Hensley** • Environmental Science & Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

811 First St. | Artesia, NM 88210

Office: 575.748.1283 | Cell: 575-703-1723

[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)

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**Sent:** Friday, April 1, 2022 2:59 PM

**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

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CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mr. Hensley and Mr. Bratcher,

Please see the attached addendum to the NMOCD-approved November 12, 2021, *Site Characterization Report and Remediation Workplan* for the WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release Site (NOY1822242858). Included in the appendices are the requested C-108 form and associated federal underground injection form. Please let us know if you require any additional information. Otherwise we will stand by for NMOCD's approval of the Remediation Workplan Addendum and the authorization to inject.

Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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**Stoffel, Jared**

---

**From:** Gilbert, Bryan  
**Sent:** Tuesday, August 23, 2022 5:31 PM  
**To:** Nobui, Jennifer, EMNRD; Stoffel, Jared; Billings, Bradford, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** Sahba, Arsin; Trevor.baird; Melanie Nolan; Clark, Darija; Hoover, Shannon; Helbert, Dana; Varnell, Richard; Hamlet, Robert, EMNRD; Harimon, Jocelyn, EMNRD  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

Good Afternoon Jennifer,

Based on the initial confirmation soil sample analytical results for the excavation performed on August 17 and 18, additional remedial excavation and sampling will be conducted at the site on Thursday, August 25.

Please let me know if you have any questions or concerns.

Thanks!

Bryan Gilbert, P.G.  
Austin Office ECW Practice Leader



505 E. Huntland Drive, Suite 250, Austin, TX 78752  
C: 925.699.6184 | F: 512.329.8750  
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Project Manager



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EMNRD - Oil Conservation Division

811 First St. | Artesia, NM 88210

Office: 575.748.1283 | Cell: 575-703-1723

[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)

<http://www.emnrd.state.nm.us/OCD/>



---

**From:** Stoffel, Jared <JStoffel@trccompanies.com>

**Sent:** Wednesday, April 6, 2022 3:42 PM

**To:** Hensley, Chad, EMNRD <Chad.Hensley@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>

**Cc:** Gilbert, Bryan <BGilbert@trccompanies.com>; Sahba, Arsin M. <arsin.sahba@hollyfrontier.com>; Melanie Nolan

<melanie.nolan@hollyenergy.com>; Trevor.baird <Trevor.baird@hollyenergy.com>; mark.shemaria

<mark.shemaria@hollyenergy.com>; Clark, Darija <dclark@trccompanies.com>; Helbert, Dana

<DHelbert@trccompanies.com>; Hoover, Shannon <SHoover@trccompanies.com>; Varnell, Richard

<RVarnell@trccompanies.com>

**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

Chad,

We would like to clarify if this also includes the approval of the injection permits, or if that come separately from the Underground Injection group? Pending approval of the injection permits, as needed, we will proceed with field work following the completion of calving season as requested by the landowner. We will notify you when calving season has completed and the landowner has given us permission to access the property. Thank you very much for the approval to proceed and the additional clarification with regards to the injection permitting process.

Jared Stoffel, P.G.  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752  
F: 512 329 8750 | C: 432 238 3003  
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](#)

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**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>  
**Sent:** Tuesday, April 5, 2022 4:42 PM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; mark.shemaria <[mark.shemaria@hollyenergy.com](mailto:mark.shemaria@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
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**ALWAYS** hover over the link to preview the actual URL/site and confirm its legitimacy.

Jared,

The OCD approves this workplan. Please proceed with the project.

Cheers,

**Chad Hensley** • Environmental Science & Specialist  
Environmental Bureau  
EMNRD - Oil Conservation Division  
811 First St. | Artesia, NM 88210  
Office: 575.748.1283 | Cell: 575-703-1723  
[chad.hensley@state.nm.us](mailto:chad.hensley@state.nm.us)  
<http://www.emnrd.state.nm.us/OCD/>



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**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Friday, April 1, 2022 2:59 PM

**To:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; mark.shemaria <[mark.shemaria@hollyenergy.com](mailto:mark.shemaria@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
**Subject:** [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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Mr. Hensley and Mr. Bratcher,

Please see the attached addendum to the NMOCD-approved November 12, 2021, *Site Characterization Report and Remediation Workplan* for the WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release Site (NOY1822242858). Included in the appendices are the requested C-108 form and associated federal underground injection form. Please let us know if you require any additional information. Otherwise we will stand by for NMOCD's approval of the Remediation Workplan Addendum and the authorization to inject.

Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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**Stoffel, Jared**

---

**From:** Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>  
**Sent:** Tuesday, August 23, 2022 5:34 PM  
**To:** Gilbert, Bryan; Stoffel, Jared; Billings, Bradford, EMNRD; Bratcher, Mike, EMNRD  
**Cc:** Sahba, Arsin; Trevor.baird; Melanie Nolan; Clark, Darija; Hoover, Shannon; Helbert, Dana; Varnell, Richard; Hamlet, Robert, EMNRD; Harimon, Jocelyn, EMNRD  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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**ALWAYS** hover over the link to preview the actual URL/site and confirm its legitimacy.

Thanks Gilbert for the notification.

Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

Thanks,  
Jennifer Nobui

---

**From:** Gilbert, Bryan <BGilbert@trccompanies.com>  
**Sent:** Tuesday, August 23, 2022 4:31 PM  
**To:** Nobui, Jennifer, EMNRD <Jennifer.Nobui@state.nm.us>; Stoffel, Jared <JStoffel@trccompanies.com>; Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; Bratcher, Mike, EMNRD <mike.bratcher@state.nm.us>  
**Cc:** Sahba, Arsin <Arsin.Sahba@HFSinclair.com>; Trevor.baird <Trevor.baird@hollyenergy.com>; Melanie Nolan <melanie.nolan@hollyenergy.com>; Clark, Darija <dclark@trccompanies.com>; Hoover, Shannon <SHoover@trccompanies.com>; Helbert, Dana <DHelbert@trccompanies.com>; Varnell, Richard <RVarnell@trccompanies.com>; Hamlet, Robert, EMNRD <Robert.Hamlet@state.nm.us>; Harimon, Jocelyn, EMNRD <Jocelyn.Harimon@state.nm.us>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

Good Afternoon Jennifer,

Based on the initial confirmation soil sample analytical results for the excavation performed on August 17 and 18, additional remedial excavation and sampling will be conducted at the site on Thursday, August 25.

Please let me know if you have any questions or concerns.

Thanks!

Bryan Gilbert, P.G.  
Austin Office ECW Practice Leader



505 E. Huntland Drive, Suite 250, Austin, TX 78752

C: 925.699.6184 | F: 512.329.8750

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---

**From:** Nobui, Jennifer, EMNRD <[Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us)>  
**Sent:** Wednesday, August 17, 2022 1:59 PM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** Sahba, Arsin <[Arsin.Sahba@HFSinclair.com](mailto:Arsin.Sahba@HFSinclair.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>; Hamlet, Robert, EMNRD <[Robert.Hamlet@state.nm.us](mailto:Robert.Hamlet@state.nm.us)>; Harimon, Jocelyn, EMNRD <[Jocelyn.Harimon@state.nm.us](mailto:Jocelyn.Harimon@state.nm.us)>  
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Thank you Jared for the notification.

Please include a copy of this and all notifications in the remedial and/or closure reports to ensure the notifications are documented in the project file.

Please let us know if you encounter any delays or have any questions.

Thanks,  
Jennifer Nobui

---

**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Friday, August 12, 2022 12:49 PM  
**To:** Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Nobui, Jennifer, EMNRD <[Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
**Cc:** Sahba, Arsin <[Arsin.Sahba@HFSinclair.com](mailto:Arsin.Sahba@HFSinclair.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to follow up on our notification of the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities with an updated timeline. Field activities were projected to be completed by August 12. An updated timeline is provided below.

- Bioventing Pilot Test - Field activities began on August 3, 2022, but the pilot test did not commence until August 9 (Day 1) due to equipment issues and troubleshooting. The pilot test is anticipated to be complete on August 15 (Day 7).
- Soil Boring – Drilling was originally scheduled for August 8. Due to a change in drill rig availability (the drill rig scheduled for the work was not operational), drilling is now scheduled for August 15.
- Quarterly Groundwater Monitoring – Due to the revised bioventing pilot test schedule (the monitoring wells cannot be gauged and sampled during the pilot test), quarterly groundwater monitoring activities are scheduled to begin August 16. This is a slight deviation from the schedule presented in the April 2022 Remediation Work Plan Addendum, which indicated quarterly groundwater monitoring would commence within 90 days of NMOCD approval of the Work Plan (i.e., August 13). Groundwater monitoring activities are expected to take 1 – 2 days.
- Remedial Excavation and Sampling – Due to the revised bioventing pilot test and quarterly groundwater monitoring schedules, remedial excavation and sampling activities are scheduled for August 17 to 19.

Please let me know if you have any questions or concerns. Thank you.

Jared Stoffel, P.G.  
Project Manager



505 E Huntland Dr STE 250 Austin, TX 78752  
F: 512 329 8750 | C: 432 238 3003  
[LinkedIn](#) | [Twitter](#) | [Blog](#) | [TRCcompanies.com](#)

---

**From:** Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>  
**Sent:** Thursday, August 4, 2022 11:48 AM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

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Hi,

Thank you for notification. Please keep this communication and include in allied report(s).

Bradford Billings  
EMNRD/OCD

---

**From:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>  
**Sent:** Monday, August 1, 2022 10:29 AM  
**To:** Nobui, Jennifer, EMNRD <[Jennifer.Nobui@state.nm.us](mailto:Jennifer.Nobui@state.nm.us)>; Billings, Bradford, EMNRD <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>

**Cc:** Gilbert, Bryan <[BGilbert@trccompanies.com](mailto:BGilbert@trccompanies.com)>; Sahba, Arsin M. <[arsin.sahba@hollyfrontier.com](mailto:arsin.sahba@hollyfrontier.com)>; Melanie Nolan <[melanie.nolan@hollyenergy.com](mailto:melanie.nolan@hollyenergy.com)>; Trevor.baird <[Trevor.baird@hollyenergy.com](mailto:Trevor.baird@hollyenergy.com)>; Clark, Darija <[dclark@trccompanies.com](mailto:dclark@trccompanies.com)>; Helbert, Dana <[DHelbert@trccompanies.com](mailto:DHelbert@trccompanies.com)>; Hoover, Shannon <[SHoover@trccompanies.com](mailto:SHoover@trccompanies.com)>; Varnell, Richard <[RVarnell@trccompanies.com](mailto:RVarnell@trccompanies.com)>  
**Subject:** RE: [EXTERNAL] WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)

All,

I would like to submit a notification that the pilot test, soil boring activities, remedial excavation activities, and quarterly groundwater sampling activities are all scheduled to begin this week on August 3, 2022. The activities are projected to be completed within 2 weeks. This email is intended to notify you of both the remedial and monitoring activities occurring onsite and the collection of final samples from the remedial excavation during this time period in accordance with NMAC 19.15.29.12 D(1)(a). Please let me know if there are any questions or concerns. Thank you.

**Jared Stoffel, P.G.**  
Project Manager



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---

**From:** Hensley, Chad, EMNRD <[Chad.Hensley@state.nm.us](mailto:Chad.Hensley@state.nm.us)>  
**Sent:** Thursday, April 7, 2022 8:16 AM  
**To:** Stoffel, Jared <[JStoffel@trccompanies.com](mailto:JStoffel@trccompanies.com)>; Bratcher, Mike, EMNRD <[mike.bratcher@state.nm.us](mailto:mike.bratcher@state.nm.us)>  
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Jared,

Good morning. The approval is for UIC and the remediation.

Cheers,

**Chad Hensley** • Environmental Science & Specialist  
Environmental Bureau  
EMNRD - Oil Conservation Division  
811 First St. | Artesia, NM 88210

Office: 575.748.1283 | Cell: 575-703-1723

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**Sent:** Wednesday, April 6, 2022 3:42 PM

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**Jared Stoffel, P.G.**  
Project Manager



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Jared,

The OCD approves this workplan. Please proceed with the project.

Cheers,

**Chad Hensley** • Environmental Science & Specialist

Environmental Bureau

EMNRD - Oil Conservation Division

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Office: 575.748.1283 | Cell: 575-703-1723

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Mr. Hensley and Mr. Bratcher,

Please see the attached addendum to the NMOCD-approved November 12, 2021, *Site Characterization Report and Remediation Workplan* for the WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release Site (NOY1822242858). Included in the appendices are the requested C-108 form and associated federal underground injection form. Please let us know if you require any additional information. Otherwise we will stand by for NMOCD's approval of the Remediation Workplan Addendum and the authorization to inject.

Thank you.

**Jared Stoffel, P.G.**  
Project Manager

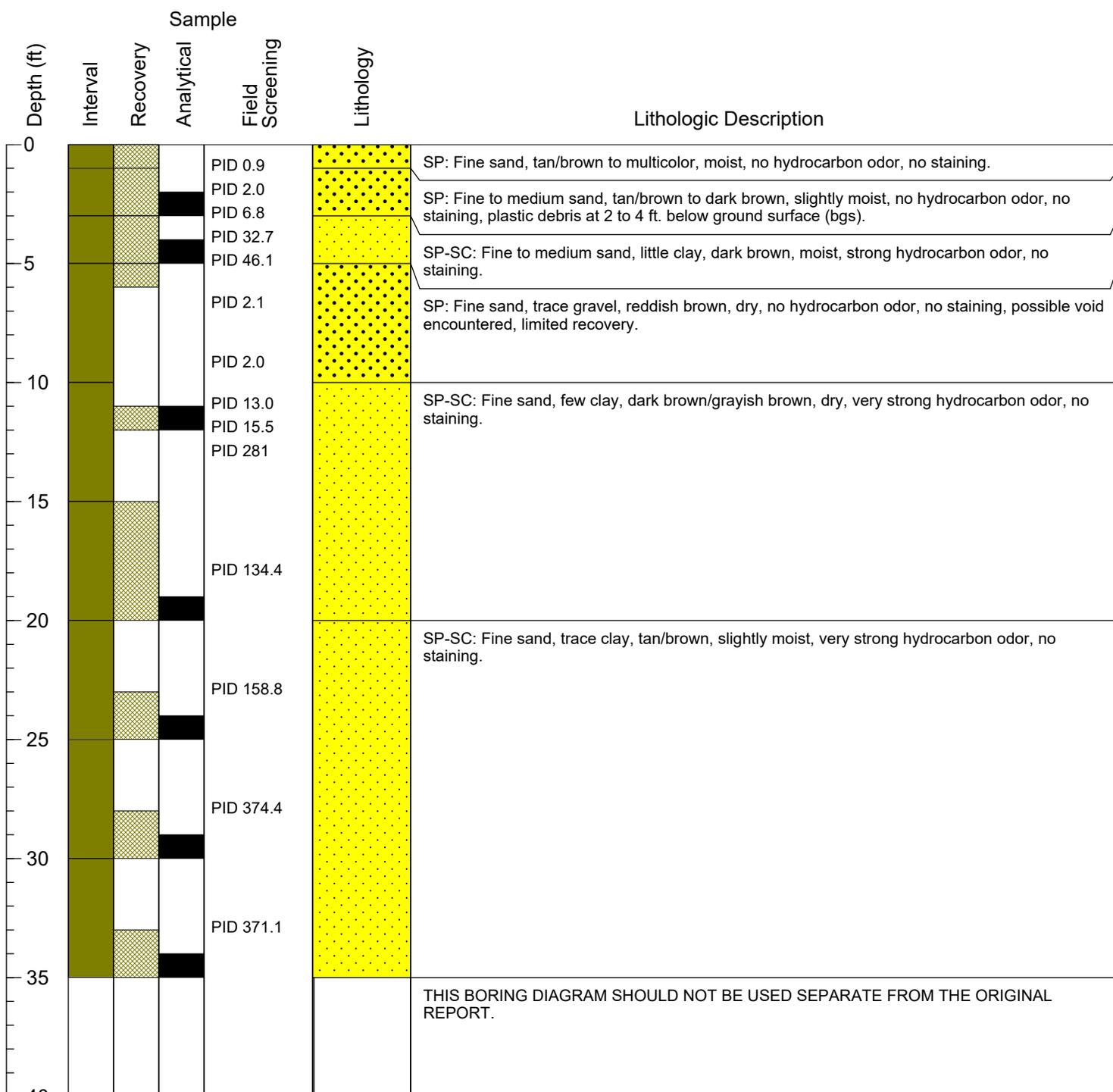


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**APPENDIX B**  
**SB-19A BORING LOG**

# TRC BORING LOG SB-19A

Client: Holly Energy Partners		TRC Project #: 497744
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 8/15/2022
Address: Klein Ranch, Monument, NM		Finish Date: 8/15/2022
Project: 2022 Remediation		Permit #: N/A
Drilling Company: Talon LPE	Drilling Crew: Miles Sorbel & crew	TRC Site Rep.: P. Garcia/E. Gaines
Drilling Method: Hollow-Stem Auger		TRC Reviewer: D. Helbert
Boring Diameter (in): 7.875	Boring Depth (ft bgs): 35.0	Coord. Sys.: WGS 84
Sampling Method: Continuous 5-ft Core Sampler		Longitude: 32.583926
Blow Count Method: N/A	Grout: 3/8" Hydrated Bentonite Chips	Latitude: -103.317412
Field Screening Parameter: Volatile Organic Compounds		Elevation Datum: N/A
Meter: MiniRAE 3000	Units: ppm	Ground Elevation (ft): NM



**APPENDIX C**  
**PHOTOGRAPHIC LOG**

## Appendix C Photographic Log



**Photo 1:** Manifold at injection well MW-1.  
Date of Photo – August 9, 2022  
Direction of Photo – East



**Photo 2:** Manifold at observation well MW-2.  
Date of Photo – August 9, 2022  
Direction of Photo – Unknown

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	1 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

## Appendix C Photographic Log



**Photo 3:** Wooden stick marking boring location of SB-19A.

Date of Photo – August 12, 2022

Direction of Photo – North



**Photo 4:** Talon (drilling company) setting up at SB-19A boring location.

Date of Photo – August 15, 2022

Direction of Photo – Southeast

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	2 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

## Appendix C Photographic Log



**Photo 5:** Hydro-excavating soil by pipeline.  
Date of Photo – August 17, 2022  
Direction of Photo – West



**Photo 6:** Excavating area to a depth of 4.5 feet below ground surface (bgs).  
Date of Photo – August 17, 2022  
Direction of Photo – West

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	3 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

## Appendix C Photographic Log



**Photo 7:** Stockpile by excavation.  
Date of Photo – August 17, 2022  
Direction of Photo – Northeast



**Photo 8:** Excavating SW-3b trench.  
Date of Photo – August 25, 2022  
Direction of Photo – East

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	4 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

### Appendix C Photographic Log



**Photo 9:** Finished excavating to 4.5 feet bgs.  
 Date of Photo – August 25, 2022  
 Direction of Photo – Southwest



**Photo 10:** Finished backfilling excavated area.  
 Date of Photo – September 1, 2022  
 Direction of Photo – East

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	5 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

# Appendix C Photographic Log



**Photo 11:** Fence installed around MW-1 after finished backfilling excavated area.  
 Date of Photo – September 1, 2022  
 Direction of Photo – North



**Photo 12:** Work area after end of field activities.  
 Date of Photo – September 1, 2022  
 Direction of Photo – North

TRC Job No.	Photographs Taken By:	Page No.	Client:	Site Name & Address:	
497744	A. Eljuri / M. Bryant / P. Garcia	6 of 6	Holly Energy Partners	WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release (Lea County, NM)	

**APPENDIX D**  
**LABORATORY ANALYTICAL REPORTS**



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10450 Stancliff Rd. Suite 210  
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September 23, 2022

Dana Helbert  
TRC Corporation  
505 East Huntland Drive  
Suite 250  
Austin, TX 78752

Work Order: **HS22080912**

Laboratory Results for: **HEP WTX to EMSU SB**

Dear Dana Helbert,

ALS Environmental received 11 sample(s) on Aug 17, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Dane J. Wacasey'.

Generated By: **ANDREW.NEIR**  
Dane J. Wacasey

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**Work Order:** HS22080912

**SAMPLE SUMMARY**

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22080912-01	Trip Blank	Water	CG-070822 -100	16-Aug-2022 11:00	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-02	SB-19A (2-3')	Soil		15-Aug-2022 15:40	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-03	SB-19A (4-5')	Soil		15-Aug-2022 15:55	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-04	SB-19A (11-12')	Soil		15-Aug-2022 16:20	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-05	SB-19A (19-20')	Soil		15-Aug-2022 16:40	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-06	SB-19A (24-25')	Soil		15-Aug-2022 16:55	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-07	SB-19A (29-30')	Soil		15-Aug-2022 17:05	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-08	SB-19A (34-35')	Soil		15-Aug-2022 17:20	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-09	Duplicate-1	Soil		15-Aug-2022 00:00	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-10	FB-08-15-2022	Water		15-Aug-2022 18:00	17-Aug-2022 09:25	<input type="checkbox"/>
HS22080912-11	EB-08-15-2022	Water		15-Aug-2022 17:50	17-Aug-2022 09:25	<input type="checkbox"/>

**ALS Houston, US**

Date: 23-Sep-22

---

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**Work Order:** HS22080912

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**CASE NARRATIVE**

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**GCMS Volatiles by Method SW8260**

**Batch ID: R415320**

**Sample ID: HS22080910-02MS**

- MS and MSD are for an unrelated sample

**Batch ID: R415293,R415535**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
- 

**WetChemistry by Method ASTM D2216**

**Batch ID: R415496**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: Trip Blank  
 Collection Date: 16-Aug-2022 11:00

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-01  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES - SW8260C</b>		<b>Method:SW8260</b>				Analyst: PC
Benzene	ND		0.0050	mg/L	1	17-Aug-2022 15:53
Ethylbenzene	ND		0.0050	mg/L	1	17-Aug-2022 15:53
m,p-Xylene	ND		0.010	mg/L	1	17-Aug-2022 15:53
o-Xylene	ND		0.0050	mg/L	1	17-Aug-2022 15:53
Toluene	ND		0.0050	mg/L	1	17-Aug-2022 15:53
Xylenes, Total	ND		0.0050	mg/L	1	17-Aug-2022 15:53
Surr: 1,2-Dichloroethane-d4	113		70-126	%REC	1	17-Aug-2022 15:53
Surr: 4-Bromofluorobenzene	90.5		82-124	%REC	1	17-Aug-2022 15:53
Surr: Dibromofluoromethane	104		77-123	%REC	1	17-Aug-2022 15:53
Surr: Toluene-d8	96.3		82-127	%REC	1	17-Aug-2022 15:53

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (2-3')  
 Collection Date: 15-Aug-2022 15:40

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-02  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:06
Ethylbenzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:06
m,p-Xylene	ND		0.0096	mg/Kg	1	22-Aug-2022 13:06
o-Xylene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:06
Toluene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:06
Xylenes, Total	ND		0.0048	mg/Kg	1	22-Aug-2022 13:06
Surr: 1,2-Dichloroethane-d4	98.7		70-126	%REC	1	22-Aug-2022 13:06
Surr: 4-Bromofluorobenzene	100		70-130	%REC	1	22-Aug-2022 13:06
Surr: Dibromofluoromethane	103		70-130	%REC	1	22-Aug-2022 13:06
Surr: Toluene-d8	95.8		70-130	%REC	1	22-Aug-2022 13:06
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	11.3		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

## ALS Houston, US

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (4-5')  
 Collection Date: 15-Aug-2022 15:55

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-03  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:28
Ethylbenzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:28
m,p-Xylene	ND		0.0096	mg/Kg	1	22-Aug-2022 13:28
o-Xylene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:28
Toluene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:28
Xylenes, Total	ND		0.0048	mg/Kg	1	22-Aug-2022 13:28
Surr: 1,2-Dichloroethane-d4	102		70-126	%REC	1	22-Aug-2022 13:28
Surr: 4-Bromofluorobenzene	104		70-130	%REC	1	22-Aug-2022 13:28
Surr: Dibromofluoromethane	106		70-130	%REC	1	22-Aug-2022 13:28
Surr: Toluene-d8	97.4		70-130	%REC	1	22-Aug-2022 13:28
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	13.2		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (11-12')  
 Collection Date: 15-Aug-2022 16:20

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-04  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:50
Ethylbenzene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:50
m,p-Xylene	ND		0.0097	mg/Kg	1	22-Aug-2022 13:50
o-Xylene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:50
Toluene	ND		0.0048	mg/Kg	1	22-Aug-2022 13:50
Xylenes, Total	ND		0.0048	mg/Kg	1	22-Aug-2022 13:50
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	22-Aug-2022 13:50
Surr: 4-Bromofluorobenzene	99.8		70-130	%REC	1	22-Aug-2022 13:50
Surr: Dibromofluoromethane	104		70-130	%REC	1	22-Aug-2022 13:50
Surr: Toluene-d8	102		70-130	%REC	1	22-Aug-2022 13:50
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	14.3		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (19-20')  
 Collection Date: 15-Aug-2022 16:40

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-05  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>		Analyst: WLR		
Benzene	ND		0.0050	mg/Kg	1	18-Aug-2022 16:56
Ethylbenzene	<b>0.14</b>		<b>0.0050</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:56
m,p-Xylene	<b>0.10</b>		<b>0.010</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:56
o-Xylene	<b>0.0094</b>		<b>0.0050</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:56
Toluene	ND		0.0050	mg/Kg	1	18-Aug-2022 16:56
<b>Xylenes, Total</b>	<b>0.11</b>		<b>0.0050</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:56
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	1	18-Aug-2022 16:56
Surr: 4-Bromofluorobenzene	121		70-130	%REC	1	18-Aug-2022 16:56
Surr: Dibromofluoromethane	98.7		70-130	%REC	1	18-Aug-2022 16:56
Surr: Toluene-d8	127		70-130	%REC	1	18-Aug-2022 16:56
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>		Analyst: FO		
Percent Moisture	<b>19.5</b>		<b>0.0100</b>	<b>wt%</b>	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (24-25')  
 Collection Date: 15-Aug-2022 16:55

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-06  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0048	mg/Kg	1	18-Aug-2022 17:18
Ethylbenzene	0.037		0.0048	mg/Kg	1	18-Aug-2022 17:18
m,p-Xylene	0.043		0.0096	mg/Kg	1	18-Aug-2022 17:18
o-Xylene	0.0051		0.0048	mg/Kg	1	18-Aug-2022 17:18
Toluene	ND		0.0048	mg/Kg	1	18-Aug-2022 17:18
Xylenes, Total	0.048		0.0048	mg/Kg	1	18-Aug-2022 17:18
Surr: 1,2-Dichloroethane-d4	99.4		70-126	%REC	1	18-Aug-2022 17:18
Surr: 4-Bromofluorobenzene	111		70-130	%REC	1	18-Aug-2022 17:18
Surr: Dibromofluoromethane	97.5		70-130	%REC	1	18-Aug-2022 17:18
Surr: Toluene-d8	117		70-130	%REC	1	18-Aug-2022 17:18
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	30.2		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (29-30')  
 Collection Date: 15-Aug-2022 17:05

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-07  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0049	mg/Kg	1	18-Aug-2022 17:40
Ethylbenzene	0.091		0.0049	mg/Kg	1	18-Aug-2022 17:40
m,p-Xylene	0.088		0.0098	mg/Kg	1	18-Aug-2022 17:40
o-Xylene	0.011		0.0049	mg/Kg	1	18-Aug-2022 17:40
Toluene	ND		0.0049	mg/Kg	1	18-Aug-2022 17:40
Xylenes, Total	0.099		0.0049	mg/Kg	1	18-Aug-2022 17:40
Surr: 1,2-Dichloroethane-d4	99.5		70-126	%REC	1	18-Aug-2022 17:40
Surr: 4-Bromofluorobenzene	122		70-130	%REC	1	18-Aug-2022 17:40
Surr: Dibromofluoromethane	98.5		70-130	%REC	1	18-Aug-2022 17:40
Surr: Toluene-d8	121		70-130	%REC	1	18-Aug-2022 17:40
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	22.9		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: SB-19A (34-35')  
 Collection Date: 15-Aug-2022 17:20

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-08  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0049	mg/Kg	1	18-Aug-2022 16:34
<b>Ethylbenzene</b>	<b>0.033</b>		<b>0.0049</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:34
<b>m,p-Xylene</b>	<b>0.053</b>		<b>0.0098</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:34
<b>o-Xylene</b>	<b>0.0057</b>		<b>0.0049</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:34
Toluene	ND		0.0049	mg/Kg	1	18-Aug-2022 16:34
<b>Xylenes, Total</b>	<b>0.059</b>		<b>0.0049</b>	<b>mg/Kg</b>	1	18-Aug-2022 16:34
Surr: 1,2-Dichloroethane-d4	101		70-126	%REC	1	18-Aug-2022 16:34
Surr: 4-Bromofluorobenzene	106		70-130	%REC	1	18-Aug-2022 16:34
Surr: Dibromofluoromethane	95.4		70-130	%REC	1	18-Aug-2022 16:34
Surr: Toluene-d8	115		70-130	%REC	1	18-Aug-2022 16:34
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
<b>Percent Moisture</b>	<b>27.3</b>		<b>0.0100</b>	<b>wt%</b>	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: Duplicate-1  
 Collection Date: 15-Aug-2022 00:00

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-09  
 Matrix:Soil

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES BY SW8260C</b>		<b>Method:SW8260</b>				Analyst: WLR
Benzene	ND		0.0050	mg/Kg	1	18-Aug-2022 18:01
Ethylbenzene	0.064		0.0050	mg/Kg	1	18-Aug-2022 18:01
m,p-Xylene	0.063		0.0099	mg/Kg	1	18-Aug-2022 18:01
o-Xylene	0.0075		0.0050	mg/Kg	1	18-Aug-2022 18:01
Toluene	ND		0.0050	mg/Kg	1	18-Aug-2022 18:01
Xylenes, Total	0.070		0.0050	mg/Kg	1	18-Aug-2022 18:01
Surr: 1,2-Dichloroethane-d4	102		70-126	%REC	1	18-Aug-2022 18:01
Surr: 4-Bromofluorobenzene	116		70-130	%REC	1	18-Aug-2022 18:01
Surr: Dibromofluoromethane	99.1		70-130	%REC	1	18-Aug-2022 18:01
Surr: Toluene-d8	116		70-130	%REC	1	18-Aug-2022 18:01
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	26.8		0.0100	wt%	1	19-Aug-2022 11:24

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: FB-08-15-2022  
 Collection Date: 15-Aug-2022 18:00

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-10  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES - SW8260C</b>		<b>Method:SW8260</b>				Analyst: PC
Benzene	ND		0.0050	mg/L	1	17-Aug-2022 16:15
Ethylbenzene	ND		0.0050	mg/L	1	17-Aug-2022 16:15
m,p-Xylene	ND		0.010	mg/L	1	17-Aug-2022 16:15
o-Xylene	ND		0.0050	mg/L	1	17-Aug-2022 16:15
Toluene	ND		0.0050	mg/L	1	17-Aug-2022 16:15
Xylenes, Total	ND		0.0050	mg/L	1	17-Aug-2022 16:15
Surr: 1,2-Dichloroethane-d4	116		70-126	%REC	1	17-Aug-2022 16:15
Surr: 4-Bromofluorobenzene	89.0		82-124	%REC	1	17-Aug-2022 16:15
Surr: Dibromofluoromethane	107		77-123	%REC	1	17-Aug-2022 16:15
Surr: Toluene-d8	96.5		82-127	%REC	1	17-Aug-2022 16:15

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU SB  
 Sample ID: EB-08-15-2022  
 Collection Date: 15-Aug-2022 17:50

**ANALYTICAL REPORT**

WorkOrder:HS22080912  
 Lab ID:HS22080912-11  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>VOLATILES - SW8260C</b>		<b>Method:SW8260</b>				Analyst: PC
Benzene	ND		0.0050	mg/L	1	17-Aug-2022 16:37
Ethylbenzene	ND		0.0050	mg/L	1	17-Aug-2022 16:37
m,p-Xylene	ND		0.010	mg/L	1	17-Aug-2022 16:37
o-Xylene	ND		0.0050	mg/L	1	17-Aug-2022 16:37
Toluene	ND		0.0050	mg/L	1	17-Aug-2022 16:37
Xylenes, Total	ND		0.0050	mg/L	1	17-Aug-2022 16:37
Surr: 1,2-Dichloroethane-d4	116		70-126	%REC	1	17-Aug-2022 16:37
Surr: 4-Bromofluorobenzene	90.0		82-124	%REC	1	17-Aug-2022 16:37
Surr: Dibromofluoromethane	107		77-123	%REC	1	17-Aug-2022 16:37
Surr: Toluene-d8	96.6		82-127	%REC	1	17-Aug-2022 16:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Sep-22

Weight / Prep Log

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**Batch ID:** 5273      **Start Date:** 18 Aug 2022 08:21      **End Date:** 18 Aug 2022 08:21  
**Method:** VOLATILES BY SW8260C

Sample ID	Container	Sample Wt/Vol	Final Volume	Weight Factor	Container Type
HS22080912-02	1	5.199 (g)	5 (mL)	0.96	Bulk (5030B)
HS22080912-03	1	5.185 (g)	5 (mL)	0.96	Bulk (5030B)
HS22080912-04	1	5.135 (g)	5 (mL)	0.97	Bulk (5030B)
HS22080912-05	1	4.956 (g)	5 (mL)	1.01	Bulk (5030B)
HS22080912-06	1	5.222 (g)	5 (mL)	0.96	Bulk (5030B)
HS22080912-07	1	5.126 (g)	5 (mL)	0.98	Bulk (5030B)
HS22080912-08	1	5.088 (g)	5 (mL)	0.98	Bulk (5030B)
HS22080912-09	1	5.038 (g)	5 (mL)	0.99	Bulk (5030B)

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> R415293 ( 0 )		<b>Test Name :</b> VOLATILES - SW8260C			<b>Matrix:</b> Water	
HS22080912-01	Trip Blank	16 Aug 2022 11:00			17 Aug 2022 15:53	1
HS22080912-10	FB-08-15-2022	15 Aug 2022 18:00			17 Aug 2022 16:15	1
HS22080912-11	EB-08-15-2022	15 Aug 2022 17:50			17 Aug 2022 16:37	1
<b>Batch ID:</b> R415320 ( 0 )		<b>Test Name :</b> VOLATILES BY SW8260C			<b>Matrix:</b> Soil	
HS22080912-05	SB-19A (19-20')	15 Aug 2022 16:40			18 Aug 2022 16:56	1
HS22080912-06	SB-19A (24-25')	15 Aug 2022 16:55			18 Aug 2022 17:18	1
HS22080912-07	SB-19A (29-30')	15 Aug 2022 17:05			18 Aug 2022 17:40	1
HS22080912-08	SB-19A (34-35')	15 Aug 2022 17:20			18 Aug 2022 16:34	1
HS22080912-09	Duplicate-1	15 Aug 2022 00:00			18 Aug 2022 18:01	1
<b>Batch ID:</b> R415496 ( 0 )		<b>Test Name :</b> MOISTURE - ASTM D2216			<b>Matrix:</b> Soil	
HS22080912-02	SB-19A (2-3')	15 Aug 2022 15:40			19 Aug 2022 11:24	1
HS22080912-03	SB-19A (4-5')	15 Aug 2022 15:55			19 Aug 2022 11:24	1
HS22080912-04	SB-19A (11-12')	15 Aug 2022 16:20			19 Aug 2022 11:24	1
HS22080912-05	SB-19A (19-20')	15 Aug 2022 16:40			19 Aug 2022 11:24	1
HS22080912-06	SB-19A (24-25')	15 Aug 2022 16:55			19 Aug 2022 11:24	1
HS22080912-07	SB-19A (29-30')	15 Aug 2022 17:05			19 Aug 2022 11:24	1
HS22080912-08	SB-19A (34-35')	15 Aug 2022 17:20			19 Aug 2022 11:24	1
HS22080912-09	Duplicate-1	15 Aug 2022 00:00			19 Aug 2022 11:24	1
<b>Batch ID:</b> R415535 ( 0 )		<b>Test Name :</b> VOLATILES BY SW8260C			<b>Matrix:</b> Soil	
HS22080912-02	SB-19A (2-3')	15 Aug 2022 15:40			22 Aug 2022 13:06	1
HS22080912-03	SB-19A (4-5')	15 Aug 2022 15:55			22 Aug 2022 13:28	1
HS22080912-04	SB-19A (11-12')	15 Aug 2022 16:20			22 Aug 2022 13:50	1

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

<b>Batch ID:</b> R415293 ( 0 )	<b>Instrument:</b> VOA9	<b>Method:</b> VOLATILES - SW8260C
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<b>MBLK</b>		Sample ID: <b>VBLKW-220817</b>		Units: <b>ug/L</b>		Analysis Date: <b>17-Aug-2022 12:54</b>			
Client ID:		Run ID: <b>VOA9_415293</b>		SeqNo: <b>6806686</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	5.0							
Ethylbenzene	ND	5.0							
m,p-Xylene	ND	10							
o-Xylene	ND	5.0							
Toluene	ND	5.0							
Xylenes, Total	ND	5.0							
Surr: 1,2-Dichloroethane-d4	55.77	0	50	0	112	70 - 130			
Surr: 4-Bromofluorobenzene	46.9	0	50	0	93.8	82 - 115			
Surr: Dibromofluoromethane	51.37	0	50	0	103	73 - 126			
Surr: Toluene-d8	48.62	0	50	0	97.2	81 - 120			

<b>LCS</b>		Sample ID: <b>VLCSW-220817</b>		Units: <b>ug/L</b>		Analysis Date: <b>17-Aug-2022 12:09</b>			
Client ID:		Run ID: <b>VOA9_415293</b>		SeqNo: <b>6806685</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.75	5.0	20	0	93.7	74 - 120			
Ethylbenzene	19.76	5.0	20	0	98.8	77 - 117			
m,p-Xylene	40.49	10	40	0	101	77 - 122			
o-Xylene	21.09	5.0	20	0	105	75 - 119			
Toluene	18.87	5.0	20	0	94.3	77 - 118			
Xylenes, Total	61.57	5.0	60	0	103	75 - 122			
Surr: 1,2-Dichloroethane-d4	53.02	0	50	0	106	70 - 130			
Surr: 4-Bromofluorobenzene	51.14	0	50	0	102	82 - 115			
Surr: Dibromofluoromethane	51.58	0	50	0	103	73 - 126			
Surr: Toluene-d8	49.2	0	50	0	98.4	81 - 120			

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

**Batch ID:** R415293 ( 0 )      **Instrument:** VOA9      **Method:** VOLATILES - SW8260C

<b>MS</b>		Sample ID: <b>HS22080762-01MS</b>		Units: <b>ug/L</b>		Analysis Date: <b>17-Aug-2022 13:39</b>			
Client ID:		Run ID: <b>VOA9_415293</b>		SeqNo: <b>6806688</b>		PrepDate:		DF: <b>5000</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	101800	25000	100000	0	102	70 - 127			
Ethylbenzene	104400	25000	100000	0	104	70 - 124			
m,p-Xylene	210700	50000	200000	0	105	70 - 130			
o-Xylene	108000	25000	100000	0	108	70 - 124			
Toluene	99110	25000	100000	0	99.1	70 - 123			
Xylenes, Total	318700	25000	300000	0	106	70 - 130			
Surr: 1,2-Dichloroethane-d4	263800	0	250000	0	106	70 - 126			
Surr: 4-Bromofluorobenzene	256500	0	250000	0	103	82 - 124			
Surr: Dibromofluoromethane	253400	0	250000	0	101	77 - 123			
Surr: Toluene-d8	241500	0	250000	0	96.6	82 - 127			

<b>MSD</b>		Sample ID: <b>HS22080762-01MSD</b>		Units: <b>ug/L</b>		Analysis Date: <b>17-Aug-2022 14:01</b>			
Client ID:		Run ID: <b>VOA9_415293</b>		SeqNo: <b>6806689</b>		PrepDate:		DF: <b>5000</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	102300	25000	100000	0	102	70 - 127	101800	0.489	20
Ethylbenzene	108600	25000	100000	0	109	70 - 124	104400	3.98	20
m,p-Xylene	216100	50000	200000	0	108	70 - 130	210700	2.54	20
o-Xylene	110800	25000	100000	0	111	70 - 124	108000	2.56	20
Toluene	100800	25000	100000	0	101	70 - 123	99110	1.74	20
Xylenes, Total	326900	25000	300000	0	109	70 - 130	318700	2.55	20
Surr: 1,2-Dichloroethane-d4	268400	0	250000	0	107	70 - 126	263800	1.71	20
Surr: 4-Bromofluorobenzene	260100	0	250000	0	104	82 - 124	256500	1.39	20
Surr: Dibromofluoromethane	256100	0	250000	0	102	77 - 123	253400	1.07	20
Surr: Toluene-d8	245000	0	250000	0	98.0	82 - 127	241500	1.43	20

The following samples were analyzed in this batch: HS22080912-01      HS22080912-10      HS22080912-11

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

<b>Batch ID:</b> R415320 ( 0 )	<b>Instrument:</b> VOA5	<b>Method:</b> VOLATILES BY SW8260C
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<b>MBLK</b>	Sample ID: <b>VBLKS1-081822</b>	Units: <b>ug/Kg</b>	Analysis Date: <b>18-Aug-2022 08:57</b>							
Client ID:	Run ID: <b>VOA5_415320</b>	SeqNo: <b>6807301</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
o-Xylene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	5.0								
Surr: 1,2-Dichloroethane-d4	47.68	0	50	0	95.4	76 - 125				
Surr: 4-Bromofluorobenzene	56.68	0	50	0	113	80 - 120				
Surr: Dibromofluoromethane	47.37	0	50	0	94.7	80 - 119				
Surr: Toluene-d8	53.53	0	50	0	107	81 - 118				

<b>LCS</b>	Sample ID: <b>VLCSS1-081822</b>	Units: <b>ug/Kg</b>	Analysis Date: <b>18-Aug-2022 08:14</b>							
Client ID:	Run ID: <b>VOA5_415320</b>	SeqNo: <b>6807300</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.35	5.0	50	0	105	75 - 124				
Ethylbenzene	50.77	5.0	50	0	102	70 - 123				
m,p-Xylene	101.9	10	100	0	102	77 - 125				
o-Xylene	50.9	5.0	50	0	102	78 - 122				
Toluene	50.31	5.0	50	0	101	76 - 122				
Xylenes, Total	152.8	5.0	150	0	102	77 - 128				
Surr: 1,2-Dichloroethane-d4	54.84	0	50	0	110	76 - 125				
Surr: 4-Bromofluorobenzene	51.88	0	50	0	104	80 - 120				
Surr: Dibromofluoromethane	56.06	0	50	0	112	80 - 119				
Surr: Toluene-d8	53.86	0	50	0	108	81 - 118				

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

**Batch ID:** R415320 ( 0 )      **Instrument:** VOA5      **Method:** VOLATILES BY SW8260C

<b>MS</b>		Sample ID: <b>HS22080910-02MS</b>			Units: <b>ug/Kg</b>		Analysis Date: <b>18-Aug-2022 11:29</b>			
Client ID:		Run ID: <b>VOA5_415320</b>			SeqNo: <b>6807833</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	26.31	5.1	51	0	51.6	70 - 130				S
Ethylbenzene	26.77	5.1	51	0	52.5	70 - 130				S
m,p-Xylene	52.99	10	102	0	52.0	70 - 130				S
o-Xylene	25.53	5.1	51	0	50.1	70 - 130				S
Toluene	26.39	5.1	51	0	51.7	70 - 130				S
Xylenes, Total	78.52	5.1	153	0	51.3	70 - 130				S
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>60.25</i>	<i>0</i>	<i>51</i>	<i>0</i>	<i>118</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>54.55</i>	<i>0</i>	<i>51</i>	<i>0</i>	<i>107</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>57.55</i>	<i>0</i>	<i>51</i>	<i>0</i>	<i>113</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>54.17</i>	<i>0</i>	<i>51</i>	<i>0</i>	<i>106</i>	<i>70 - 130</i>				

<b>MSD</b>		Sample ID: <b>HS22080910-02MSD</b>			Units: <b>ug/Kg</b>		Analysis Date: <b>18-Aug-2022 11:51</b>			
Client ID:		Run ID: <b>VOA5_415320</b>			SeqNo: <b>6807834</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	31.13	5.0	50.5	0	61.6	70 - 130	26.31	16.8	30	S
Ethylbenzene	30.48	5.0	50.5	0	60.4	70 - 130	26.77	12.9	30	S
m,p-Xylene	60.49	10	101	0	59.9	70 - 130	52.99	13.2	30	S
o-Xylene	29.72	5.0	50.5	0	58.9	70 - 130	25.53	15.2	30	S
Toluene	30.1	5.0	50.5	0	59.6	70 - 130	26.39	13.1	30	S
Xylenes, Total	90.21	5.0	151.5	0	59.5	70 - 130	78.52	13.9	30	S
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>60.31</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>119</i>	<i>70 - 126</i>	<i>60.25</i>	<i>0.0974</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>53.82</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>107</i>	<i>70 - 130</i>	<i>54.55</i>	<i>1.35</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>55.23</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>109</i>	<i>70 - 130</i>	<i>57.55</i>	<i>4.12</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>53.23</i>	<i>0</i>	<i>50.5</i>	<i>0</i>	<i>105</i>	<i>70 - 130</i>	<i>54.17</i>	<i>1.75</i>	<i>30</i>	

The following samples were analyzed in this batch: 

HS22080912-05	HS22080912-06	HS22080912-07	HS22080912-08
HS22080912-09			

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

<b>Batch ID:</b> R415535 ( 0 )	<b>Instrument:</b> VOA5	<b>Method:</b> VOLATILES BY SW8260C
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<b>MBLK</b>	Sample ID: <b>VBLKS1-082222</b>	Units: <b>ug/Kg</b>	Analysis Date: <b>22-Aug-2022 09:07</b>							
Client ID:	Run ID: <b>VOA5_415535</b>	SeqNo: <b>6811891</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	ND	5.0								
Ethylbenzene	ND	5.0								
m,p-Xylene	ND	10								
o-Xylene	ND	5.0								
Toluene	ND	5.0								
Xylenes, Total	ND	5.0								
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>48.11</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>96.2</i>	<i>76 - 125</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>51.96</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>104</i>	<i>80 - 120</i>				
<i>Surr: Dibromofluoromethane</i>	<i>51.57</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>80 - 119</i>				
<i>Surr: Toluene-d8</i>	<i>53.49</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>107</i>	<i>81 - 118</i>				

<b>LCS</b>	Sample ID: <b>VLCSS1-082222</b>	Units: <b>ug/Kg</b>	Analysis Date: <b>22-Aug-2022 08:23</b>							
Client ID:	Run ID: <b>VOA5_415535</b>	SeqNo: <b>6811890</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	52.07	5.0	50	0	104	75 - 124				
Ethylbenzene	49.32	5.0	50	0	98.6	70 - 123				
m,p-Xylene	101.5	10	100	0	102	77 - 125				
o-Xylene	50.33	5.0	50	0	101	78 - 122				
Toluene	50.58	5.0	50	0	101	76 - 122				
Xylenes, Total	151.8	5.0	150	0	101	77 - 128				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.46</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>76 - 125</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>51.33</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>103</i>	<i>80 - 120</i>				
<i>Surr: Dibromofluoromethane</i>	<i>56.98</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>114</i>	<i>80 - 119</i>				
<i>Surr: Toluene-d8</i>	<i>52.88</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>81 - 118</i>				

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

**Batch ID:** R415535 ( 0 )      **Instrument:** VOA5      **Method:** VOLATILES BY SW8260C

<b>MS</b>		Sample ID: <b>HS22080997-09MS</b>			Units: <b>ug/Kg</b>		Analysis Date: <b>22-Aug-2022 10:55</b>			
Client ID:		Run ID: <b>VOA5_415535</b>			SeqNo: <b>6811987</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.66	5.0	50	0	89.3	70 - 130				
Ethylbenzene	42.62	5.0	50	0	85.2	70 - 130				
m,p-Xylene	84.1	10	100	0	84.1	70 - 130				
o-Xylene	42.58	5.0	50	0	85.2	70 - 130				
Toluene	42.84	5.0	50	0	85.7	70 - 130				
Xylenes, Total	126.7	5.0	150	0	84.5	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.63</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>55.57</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>111</i>	<i>70 - 130</i>				
<i>Surr: Dibromofluoromethane</i>	<i>56.23</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>112</i>	<i>70 - 130</i>				
<i>Surr: Toluene-d8</i>	<i>53.06</i>	<i>0</i>	<i>50</i>	<i>0</i>	<i>106</i>	<i>70 - 130</i>				

<b>MSD</b>		Sample ID: <b>HS22080997-09MSD</b>			Units: <b>ug/Kg</b>		Analysis Date: <b>22-Aug-2022 11:17</b>			
Client ID:		Run ID: <b>VOA5_415535</b>			SeqNo: <b>6811988</b>		PrepDate:		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	42.14	4.9	49	0	86.0	70 - 130	44.66	5.81	30	
Ethylbenzene	38.7	4.9	49	0	79.0	70 - 130	42.62	9.64	30	
m,p-Xylene	77.51	9.8	98	0	79.1	70 - 130	84.1	8.16	30	
o-Xylene	38.26	4.9	49	0	78.1	70 - 130	42.58	10.7	30	
Toluene	40.12	4.9	49	0	81.9	70 - 130	42.84	6.56	30	
Xylenes, Total	115.8	4.9	147	0	78.8	70 - 130	126.7	9	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>51.42</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>105</i>	<i>70 - 126</i>	<i>52.63</i>	<i>2.32</i>	<i>30</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>52.42</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>107</i>	<i>70 - 130</i>	<i>55.57</i>	<i>5.84</i>	<i>30</i>	
<i>Surr: Dibromofluoromethane</i>	<i>55.19</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>113</i>	<i>70 - 130</i>	<i>56.23</i>	<i>1.87</i>	<i>30</i>	
<i>Surr: Toluene-d8</i>	<i>51.02</i>	<i>0</i>	<i>49</i>	<i>0</i>	<i>104</i>	<i>70 - 130</i>	<i>53.06</i>	<i>3.93</i>	<i>30</i>	

The following samples were analyzed in this batch: HS22080912-02      HS22080912-03      HS22080912-04

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QC BATCH REPORT**

<b>Batch ID:</b> R415496 ( 0 )		<b>Instrument:</b> Balance1		<b>Method:</b> MOISTURE - ASTM D2216					
<b>DUP</b>	Sample ID: <b>HS22080918-09DUP</b>	Units: <b>wt%</b>		Analysis Date: <b>19-Aug-2022 11:24</b>					
Client ID:	Run ID: <b>Balance1_415496</b>	SeqNo: <b>6811027</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Percent Moisture	19.6	0.0100					19.9	1.52	20
------------------	------	--------	--	--	--	--	------	------	----

The following samples were analyzed in this batch:

HS22080912-02	HS22080912-03	HS22080912-04	HS22080912-05
HS22080912-06	HS22080912-07	HS22080912-08	HS22080912-09

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU SB  
**WorkOrder:** HS22080912

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

<b>Acronym</b>	<b>Description</b>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<b>Unit Reported</b>	<b>Description</b>
mg/Kg-dry	Milligrams per Kilogram- Dry weight corrected
mg/L	Milligrams per Liter

ALS Houston, US

Date: 23-Sep-22

**CERTIFICATIONS, ACCREDITATIONS & LICENSES**

<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US

Date: 23-Sep-22

Sample Receipt Checklist

Work Order ID: HS22080912

Date/Time Received: 17-Aug-2022 09:25

Client Name: TRC-AUS

Received by: Nilesh D. Ranchod

Completed By: /S/ Corey Grandits	17-Aug-2022 13:16	Reviewed by: /S/ Dane J. Wacasey	19-Aug-2022 13:52
eSignature	Date/Time	eSignature	Date/Time

Matrices: S/W

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes  No  Not Present
- Chain of custody present? Yes  No  1 Page(s)
- Chain of custody signed when relinquished and received? Yes  No  COC IDs:279060
- Samplers name present on COC? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No

Temperature(s)/Thermometer(s):	2.2UC/2.7C	IR31
Cooler(s)/Kit(s):	49093	
Date/Time sample(s) sent to storage:	8/17/2022	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
pH adjusted by:		

Login Notes: Two water samples received not listed on the COC, logged in for VOC analysis:  
 RB081522 @ 18:00  
 EB081522 @ 17:50

Client Contacted:	Date Contacted:	Person Contacted:
Contacted By:	Regarding:	
Comments:		
Corrective Action:		



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# Chain of Custody Form

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Salt Lake City, UT  
+1 801 266 7700

York, PA  
+1 717 505 5280

**REVISED**

Page 1 of 1

COC ID: 279060

Customer Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	497744	Project Name	HEP WTX to EMSU	Parameter/Method Request for Analysis	
Work Order		Project Number	497744	A	8260 S (8260 BTEX)
Company Name	TRC Corporation	Bill To Company	TRC Corporation	B	MOIST ASTM (Moisture %)
Send Report To	Dana Helbert	Invoice Attn	TRC-AP	C	8260 W (Soil TB/EB/TB; 8260 BTEX)
Address	505 East Huntland Drive	Address	505 East Huntland Drive	D	
	Suite 250		Suite 250	E	
City/State/Zip	Austin, TX 78752	City/State/Zip	Austin TX 78752	F	
Phone	(512) 329-6080	Phone	(512) 329-6080	G	
Fax	(512) 329-8750	Fax	(512) 329-8750	H	
e-Mail Address	DHelbert@trccompanies.com	e-Mail Address	apinvoiceapproval@trccompanies.com	I	

**HS22080912**  
TRC Corporation  
HEP WTX to EMSU SB

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Trip Blank	8/16/22	11:05Am	Water	1.8	2			X								
2	SB-19A (2-3')	8/15/22	15:40pm	Soil		1	X	X									
3	SB-19A (4-5')	8/15/22	15:55pm	Soil		1	X	X									
4	SB-19A (11-12')	8/15/22	16:20pm	Soil		1	X	X									
5	SB-19A (19-20')	8/15/22	16:40pm	Soil		1	X	X									
6	SB-19A (24-25')	8/15/22	16:55pm	Soil		1	X	X									
7	SB-19A (29-30')	8/15/22	17:05pm	Soil		1	X	X									
8	SB-19A (34-35')	8/15/22	17:20pm	Soil		1	X	X									
9	Duplicate - 1	8/15/22		Soil		1	X	X									
10		8/15/22	1750	W		3	X	X									

Sampler(s) Please Print & Sign: Patrick Garcia

Relinquished by: Patrick Garcia Date: 8/16/22 Time: 09.25

Received by (Laboratory): [Signature] Date: 8/17/22 Time: 09.25

Checked by (Laboratory): [Signature]

Required Turnaround Time:  STG 10 Wk Days  5 Wk Days  2 Wk Days  24 Mo

Notes: HEP WTX to EMSU

Cooler ID: 49093 Cooler Temp: 4.5

QC Package: (Check One Box Below)

Level II Std QC  TRRP Level IV

Level III Std QC/Par/Date

Level IV SWS/6CLP

Other:

Preservative Key: 1-HCl 2-HNO<sub>3</sub> 3-H<sub>2</sub>SO<sub>4</sub> 4-NaOH 5-Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 6-NaHSO<sub>4</sub> 7-Other 8-4°C 9-5035

ote: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
3. The Chain of Custody is a legal document. All information must be completed accurately.

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# Chain of Custody Form

Page 1 of 1

COC ID: 279060

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+1 717 944 5541

Spring City, PA  
+1 610 948 4903  
Salt Lake City, UT  
+1 801 266 7700

Customer Information		ALS Project Manager:		ALS Work Order #:	
Purchase Order	497744	Project Name	HEP WTX to EMSU	Parameter/Method Request for Analysis	
Work Order		Project Number	497744	A	8260_S (Soil TB/EB/TB: 8260 BTEX)
Company Name	TRC Corporation	Bill To Company	TRC Corporation	B	MOIST_ASTM (Moisture %)
Send Report To	Dana Helbert	Invoice Attn	TRC-AP	C	8260_W (Soil TB/EB/TB: 8260 BTEX)
Address	505 East Huntland Drive Suite 250	Address	505 East Huntland Drive Suite 250	D	
City/State/Zip	Austin, TX 78752	City/State/Zip	Austin TX 78752	E	
Phone	(512) 329-6080	Phone	(512) 329-6080	F	
Fax	(512) 329-8750	Fax	(512) 329-8750	G	
e-Mail Address	DHelbert@trccompanies.com	e-Mail Address	apinvoiceapproval@trccompanies.com	H	
				I	

**HS22080912**  
TRC Corporation  
HEP WTX to EMSU

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	Trip Blank	8/16/22	11:05am	Water	1.8	2			X								
2	SB-19A (2-3')	8/15/22	15:40pm	Soil		1	X	X									
3	SB-19A (4-5')	8/15/22	15:55pm	Soil		1	X	X									
4	SB-19A (11-12')	8/15/22	16:20pm	Soil		1	X	X									
5	SB-19A (19-20')	8/15/22	16:40pm	Soil		1	X	X									
6	SB-19A (24-25')	8/15/22	16:55pm	Soil		1	X	X									
7	SB-19A (29-30')	8/15/22	17:05pm	Soil		1	X	X									
8	SB-19A (34-35')	8/15/22	17:20pm	Soil		1	X	X									
9	Duplicate - 1	8/15/22		Soil		1	X	X									
0							X	X									

Sampler(s) Please Print & Sign <i>Patrick Garcia</i>		Shipment Method		Required Turnaround Time: (Check Box)			Results Due Date:	
Relinquished by: <i>Patrick Garcia</i>		Date: 8/16/22	Time:	<input type="checkbox"/> STD 10 Wk Days <input checked="" type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hrs				
Relinquished by:		Date: 8/17/22	Time: 09:25	Received by (Laboratory): <i>MR</i>		Notes: HEP WTX to EMSU		
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		Cooler ID: 49093	Cooler Temp: 4.5	OC Package: (Check One Box Below)
Reservative Key: 1-HCl 2-HNO <sub>3</sub> 3-H <sub>2</sub> SO <sub>4</sub> 4-NaOH 5-Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> 6-NaHSO <sub>4</sub> 7-Other 8-4°C 9-5035								<input checked="" type="checkbox"/> Level II Std CC <input type="checkbox"/> Level III Std UCL/Pass Date <input type="checkbox"/> Level IV SW846/CLP <input type="checkbox"/> Other

1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.  
 2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.  
 3. The Chain of Custody is a legal document. All information must be completed accurately.

 <b>ALS</b> 10450 Stancliff Rd., Suite 210 Houston, Texas 77099 Tel. +1 281 530 5656 Fax. +1 281 530 5887	<b>CUSTODY SEAL</b>		Seal Broken By:
	Date: 8/16/22	Time: 11:05AM	<i>SM</i>
	Name: PATRICK GARCIA	Company: TRC	Date: 08/17/22

49093



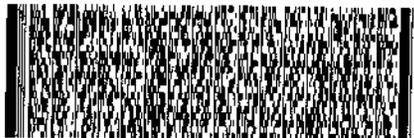
49093

ORIGIN ID: SGRA (512) 329-6080	SHIP DATE: 27 JUL 22
CHRISTINE BUNTING/ AUDREY ELJURI	ACTWT: 1.00 LB MAN
TRC TKOBT	CAD: 0221247/CAFE3512
505 E. HUNTLAND DR	DIMS: 26x14x14 IN
STE. 250	
AUSTIN, TX 78752	
UNITED STATES US	

TO SHIPPING DEPT  
 ALS LABORATORY GROUP  
 10450 STANCLIFF RD  
 SUITE 210  
 HOUSTON TX 77099

(281) 630-6886  
 REF: HEP WTX TO EMSU - BC 86863 - AN

RMA: 01111101



FedEx Express



FedEx  
 TRK# 5789 1996 2625

WED - 17 AUG 10:30A  
 PRIORITY OVERNIGHT

AB SGRA

77099  
 TX-US IAN



#4235551 08/16 581J2/F350/FE20



---

10450 Stancliff Rd. Suite 210  
Houston, TX 77099  
T: +1 281 530 5656  
F: +1 281 530 5887

September 23, 2022

Dana Helbert  
TRC Corporation  
505 East Huntland Drive  
Suite 250  
Austin, TX 78752

Work Order: **HS22081037**

Laboratory Results for: **HEP WTX to EMSU Soil**

Dear Dana Helbert,

ALS Environmental received 11 sample(s) on Aug 19, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy C. Neir'.

Generated By: ANDREW.NEIR  
Andy C. Neir

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**Work Order:** HS22081037

**SAMPLE SUMMARY**

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22081037-01	CS-SW-1@2.25'	Solid		18-Aug-2022 11:00	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-02	CS-SW-2@2.25'	Solid		18-Aug-2022 11:05	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-03	CS-SW-3@2.25'	Solid		18-Aug-2022 11:10	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-04	CS-SW-4@2.25'	Solid		18-Aug-2022 11:15	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-05	CS-1@4.5'	Solid		18-Aug-2022 11:20	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-06	CS-2@4.5'	Solid		18-Aug-2022 11:25	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-07	CS-3@4.5'	Solid		18-Aug-2022 11:30	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-08	CS-4@4.5'	Solid		18-Aug-2022 11:35	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-09	CS-5@4.5'	Solid		18-Aug-2022 11:40	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-10	Duplicate-1	Solid		18-Aug-2022 00:00	19-Aug-2022 09:10	<input type="checkbox"/>
HS22081037-11	EB-20220818	Water		18-Aug-2022 12:30	19-Aug-2022 09:10	<input type="checkbox"/>

ALS Houston, US

Date: 23-Sep-22

Client: TRC Corporation  
Project: HEP WTX to EMSU Soil  
Work Order: HS22081037

CASE NARRATIVE

---

**GC Semivolatiles by Method SW8015M**

**Batch ID: 182668**

**Sample ID: CS-1@4.5' (HS22081037-05)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: CS-2@4.5' (HS22081037-06)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: CS-3@4.5' (HS22081037-07)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: CS-5@4.5' (HS22081037-09)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: CS-SW-1@2.25' (HS22081037-01MS)**

- The recovery of the Matrix Spike (MS) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The recovery of the MS may be due to sample matrix interference.

**Sample ID: CS-SW-1@2.25' (HS22081037-01MSD)**

- The recovery of the Matrix Spike Duplicate (MSD) associated to this analyte was outside of the established control limits. However, the LCS was within control limits. The failed recovery of the MSD may be due to sample matrix interference.

**Sample ID: CS-SW-3@2.25' (HS22081037-03)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: Duplicate-1 (HS22081037-10)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Batch ID: 182662**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**GC Volatiles by Method SW8015**

**Batch ID: R415440,R415514,R415538**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

---

**WetChemistry by Method ASTM D2216**

**Batch ID: R415524**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-SW-1@2.25'  
 Collection Date: 18-Aug-2022 11:00

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-01  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.049	mg/Kg	1	21-Aug-2022 11:03
Surr: 4-Bromofluorobenzene	105		70-123	%REC	1	21-Aug-2022 11:03
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	16		1.7	mg/Kg	1	19-Aug-2022 22:05
TPH (Motor Oil Range)	28	n	3.4	mg/Kg	1	19-Aug-2022 22:05
Surr: 2-Fluorobiphenyl	78.1		60-129	%REC	1	19-Aug-2022 22:05
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	7.10		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-SW-2@2.25'  
 Collection Date: 18-Aug-2022 11:05

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-02  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.049	mg/Kg	1	21-Aug-2022 11:19
Surr: 4-Bromofluorobenzene	100		70-123	%REC	1	21-Aug-2022 11:19
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	2.5		1.7	mg/Kg	1	19-Aug-2022 23:25
TPH (Motor Oil Range)	6.3	n	3.4	mg/Kg	1	19-Aug-2022 23:25
Surr: 2-Fluorobiphenyl	120		60-129	%REC	1	19-Aug-2022 23:25
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	5.41		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-SW-3@2.25'  
 Collection Date: 18-Aug-2022 11:10

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-03  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: FT		
Gasoline Range Organics	ND		0.048	mg/Kg	1	21-Aug-2022 11:35
Surr: 4-Bromofluorobenzene	103		70-123	%REC	1	21-Aug-2022 11:35
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 19-Aug-2022		Analyst: PPM
TPH (Diesel Range)	190		170	mg/Kg	100	19-Aug-2022 23:52
TPH (Motor Oil Range)	1,200	n	340	mg/Kg	100	19-Aug-2022 23:52
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	19-Aug-2022 23:52
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>		Analyst: FO		
Percent Moisture	7.48		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-SW-4@2.25'  
 Collection Date: 18-Aug-2022 11:15

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-04  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>		Analyst: FT		
Gasoline Range Organics	ND		0.050	mg/Kg	1	22-Aug-2022 10:02
Surr: 4-Bromofluorobenzene	102		70-123	%REC	1	22-Aug-2022 10:02
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 19-Aug-2022		Analyst: PPM
TPH (Diesel Range)	3.5		1.7	mg/Kg	1	20-Aug-2022 01:11
TPH (Motor Oil Range)	5.9	n	3.4	mg/Kg	1	20-Aug-2022 01:11
Surr: 2-Fluorobiphenyl	86.1		60-129	%REC	1	20-Aug-2022 01:11
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>		Analyst: FO		
Percent Moisture	2.03		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-1@4.5'  
 Collection Date: 18-Aug-2022 11:20

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-05  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.049	mg/Kg	1	21-Aug-2022 12:06
Surr: 4-Bromofluorobenzene	102		70-123	%REC	1	21-Aug-2022 12:06
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 19-Aug-2022		Analyst: PPM
TPH (Diesel Range)	800		170	mg/Kg	100	20-Aug-2022 01:38
TPH (Motor Oil Range)	2,300	n	340	mg/Kg	100	20-Aug-2022 01:38
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	20-Aug-2022 01:38
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	4.53		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-2@4.5'  
 Collection Date: 18-Aug-2022 11:25

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-06  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	21-Aug-2022 12:22
Surr: 4-Bromofluorobenzene	95.2		70-123	%REC	1	21-Aug-2022 12:22
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	330		170	mg/Kg	100	20-Aug-2022 02:05
TPH (Motor Oil Range)	1,600	n	340	mg/Kg	100	20-Aug-2022 02:05
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	20-Aug-2022 02:05
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	5.43		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-3@4.5'  
 Collection Date: 18-Aug-2022 11:30

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-07  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.048	mg/Kg	1	21-Aug-2022 12:38
Surr: 4-Bromofluorobenzene	101		70-123	%REC	1	21-Aug-2022 12:38
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	650		170	mg/Kg	100	20-Aug-2022 02:32
TPH (Motor Oil Range)	1,700	n	340	mg/Kg	100	20-Aug-2022 02:32
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	20-Aug-2022 02:32
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	5.51		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-4@4.5'  
 Collection Date: 18-Aug-2022 11:35

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-08  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	21-Aug-2022 13:25
Surr: 4-Bromofluorobenzene	103		70-123	%REC	1	21-Aug-2022 13:25
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	21		8.4	mg/Kg	5	20-Aug-2022 02:59
TPH (Motor Oil Range)	64	n	17	mg/Kg	5	20-Aug-2022 02:59
Surr: 2-Fluorobiphenyl	92.5		60-129	%REC	5	20-Aug-2022 02:59
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	6.83		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-5@4.5'  
 Collection Date: 18-Aug-2022 11:40

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-09  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	15		0.050	mg/Kg	1	21-Aug-2022 13:41
Surr: 4-Bromofluorobenzene	114		70-123	%REC	1	21-Aug-2022 13:41
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3541 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	5,500		850	mg/Kg	500	20-Aug-2022 03:25
TPH (Motor Oil Range)	6,300	n	1700	mg/Kg	500	20-Aug-2022 03:25
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	500	20-Aug-2022 03:25
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	5.30		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: Duplicate-1  
 Collection Date: 18-Aug-2022 00:00

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-10  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	21-Aug-2022 13:57
Surr: 4-Bromofluorobenzene	110		70-123	%REC	1	21-Aug-2022 13:57
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 19-Aug-2022		Analyst: PPM
TPH (Diesel Range)	340		170	mg/Kg	100	20-Aug-2022 03:52
TPH (Motor Oil Range)	1,700	n	340	mg/Kg	100	20-Aug-2022 03:52
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	20-Aug-2022 03:52
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	6.89		0.0100	wt%	1	20-Aug-2022 08:32

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: EB-20220818  
 Collection Date: 18-Aug-2022 12:30

**ANALYTICAL REPORT**

WorkOrder:HS22081037  
 Lab ID:HS22081037-11  
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.0500	mg/L	1	19-Aug-2022 12:52
Surr: 4-Bromofluorobenzene	100		70-123	%REC	1	19-Aug-2022 12:52
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>			Prep:SW3511 / 19-Aug-2022	Analyst: PPM
TPH (Diesel Range)	ND		0.051	mg/L	1	19-Aug-2022 15:04
TPH (Oil Range)	ND		0.10	mg/L	1	19-Aug-2022 15:04
Surr: 2-Fluorobiphenyl	81.3		60-135	%REC	1	19-Aug-2022 15:04

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Sep-22

## Weight / Prep Log

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**Batch ID:** 5279      **Start Date:** 19 Aug 2022 11:58      **End Date:** 19 Aug 2022 11:58  
**Method:** GASOLINE RANGE ORGANICS BY SW8015C      **Prep Code:**

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081037-01	1	5.102 (g)	5 (mL)	0.98	Bulk (5030B)
HS22081037-02	1	5.126 (g)	5 (mL)	0.98	Bulk (5030B)
HS22081037-03	1	5.194 (g)	5 (mL)	0.96	Bulk (5030B)
HS22081037-04	1	5.005 (g)	5 (mL)	1	Bulk (5030B)
HS22081037-05	1	5.111 (g)	5 (mL)	0.98	Bulk (5030B)
HS22081037-06	1	5.061 (g)	5 (mL)	0.99	Bulk (5030B)
HS22081037-07	1	5.166 (g)	5 (mL)	0.97	Bulk (5030B)
HS22081037-08	1	5.039 (g)	5 (mL)	0.99	Bulk (5030B)
HS22081037-09	1	5.018 (g)	5 (mL)	1	Bulk (5030B)
HS22081037-10	1	5.05 (g)	5 (mL)	0.99	Bulk (5030B)

**Batch ID:** 182662      **Start Date:** 19 Aug 2022 11:27      **End Date:** 19 Aug 2022 13:00  
**Method:** SW3511      **Prep Code:** 3511\_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081037-11		32.21 (mL)	2 (mL)	0.06209	40 mL VOA vial, Neat

**Batch ID:** 182668      **Start Date:** 19 Aug 2022 11:00      **End Date:** 19 Aug 2022 15:00  
**Method:** SOPREP: 3541 TPH      **Prep Code:** 8015SPR\_LL

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081037-01		30.12 (g)	1 (mL)	0.0332	4-oz glass, Neat
HS22081037-02		30.38 (g)	1 (mL)	0.03292	4-oz glass, Neat
HS22081037-03		30.42 (g)	1 (mL)	0.03287	4-oz glass, Neat
HS22081037-04		30.17 (g)	1 (mL)	0.03315	4-oz glass, Neat
HS22081037-05		30.25 (g)	1 (mL)	0.03306	4-oz glass, Neat
HS22081037-06		30.39 (g)	1 (mL)	0.03291	4-oz glass, Neat
HS22081037-07		30.11 (g)	1 (mL)	0.03321	4-oz glass, Neat
HS22081037-08		30.24 (g)	1 (mL)	0.03307	4-oz glass, Neat
HS22081037-09		30.05 (g)	1 (mL)	0.03328	4-oz glass, Neat
HS22081037-10		30.03 (g)	1 (mL)	0.0333	4-oz glass, Neat

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 182662 ( 0 )		<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Water	
HS22081037-11	EB-20220818	18 Aug 2022 12:30		19 Aug 2022 11:27	19 Aug 2022 15:04	1
<b>Batch ID:</b> 182668 ( 0 )		<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Solid	
HS22081037-01	CS-SW-1@2.25'	18 Aug 2022 11:00		19 Aug 2022 11:30	19 Aug 2022 22:05	1
HS22081037-02	CS-SW-2@2.25'	18 Aug 2022 11:05		19 Aug 2022 11:30	19 Aug 2022 23:25	1
HS22081037-03	CS-SW-3@2.25'	18 Aug 2022 11:10		19 Aug 2022 11:30	19 Aug 2022 23:52	100
HS22081037-04	CS-SW-4@2.25'	18 Aug 2022 11:15		19 Aug 2022 11:30	20 Aug 2022 01:11	1
HS22081037-05	CS-1@4.5'	18 Aug 2022 11:20		19 Aug 2022 11:30	20 Aug 2022 01:38	100
HS22081037-06	CS-2@4.5'	18 Aug 2022 11:25		19 Aug 2022 11:30	20 Aug 2022 02:05	100
HS22081037-07	CS-3@4.5'	18 Aug 2022 11:30		19 Aug 2022 11:30	20 Aug 2022 02:32	100
HS22081037-08	CS-4@4.5'	18 Aug 2022 11:35		19 Aug 2022 11:30	20 Aug 2022 02:59	5
HS22081037-09	CS-5@4.5'	18 Aug 2022 11:40		19 Aug 2022 11:30	20 Aug 2022 03:25	500
HS22081037-10	Duplicate-1	18 Aug 2022 00:00		19 Aug 2022 11:30	20 Aug 2022 03:52	100
<b>Batch ID:</b> R415440 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Water	
HS22081037-11	EB-20220818	18 Aug 2022 12:30			19 Aug 2022 12:52	1
<b>Batch ID:</b> R415514 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Solid	
HS22081037-01	CS-SW-1@2.25'	18 Aug 2022 11:00			21 Aug 2022 11:03	1
HS22081037-02	CS-SW-2@2.25'	18 Aug 2022 11:05			21 Aug 2022 11:19	1
HS22081037-03	CS-SW-3@2.25'	18 Aug 2022 11:10			21 Aug 2022 11:35	1
HS22081037-05	CS-1@4.5'	18 Aug 2022 11:20			21 Aug 2022 12:06	1
HS22081037-06	CS-2@4.5'	18 Aug 2022 11:25			21 Aug 2022 12:22	1
HS22081037-07	CS-3@4.5'	18 Aug 2022 11:30			21 Aug 2022 12:38	1
HS22081037-08	CS-4@4.5'	18 Aug 2022 11:35			21 Aug 2022 13:25	1
HS22081037-09	CS-5@4.5'	18 Aug 2022 11:40			21 Aug 2022 13:41	1
HS22081037-10	Duplicate-1	18 Aug 2022 00:00			21 Aug 2022 13:57	1
<b>Batch ID:</b> R415524 ( 0 )		<b>Test Name :</b> MOISTURE - ASTM D2216			<b>Matrix:</b> Solid	
HS22081037-01	CS-SW-1@2.25'	18 Aug 2022 11:00			20 Aug 2022 08:32	1
HS22081037-02	CS-SW-2@2.25'	18 Aug 2022 11:05			20 Aug 2022 08:32	1
HS22081037-03	CS-SW-3@2.25'	18 Aug 2022 11:10			20 Aug 2022 08:32	1
HS22081037-04	CS-SW-4@2.25'	18 Aug 2022 11:15			20 Aug 2022 08:32	1
HS22081037-05	CS-1@4.5'	18 Aug 2022 11:20			20 Aug 2022 08:32	1
HS22081037-06	CS-2@4.5'	18 Aug 2022 11:25			20 Aug 2022 08:32	1
HS22081037-07	CS-3@4.5'	18 Aug 2022 11:30			20 Aug 2022 08:32	1
HS22081037-08	CS-4@4.5'	18 Aug 2022 11:35			20 Aug 2022 08:32	1
HS22081037-09	CS-5@4.5'	18 Aug 2022 11:40			20 Aug 2022 08:32	1
HS22081037-10	Duplicate-1	18 Aug 2022 00:00			20 Aug 2022 08:32	1
<b>Batch ID:</b> R415538 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Solid	
HS22081037-04	CS-SW-4@2.25'	18 Aug 2022 11:15			22 Aug 2022 10:02	1

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> 182662 ( 0 )	<b>Instrument:</b> FID-16	<b>Method:</b> TPH DRO/ORO BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-182662</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 13:36</b>							
Client ID:	Run ID: <b>FID-16_415549</b>	SeqNo: <b>6812097</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	0.050								
TPH (Oil Range)	ND	0.10								
Surr: 2-Fluorobiphenyl	0.04267	0.0050	0.06	0	71.1	60 - 135				

<b>LCS</b>	Sample ID: <b>LCS-182662</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 14:05</b>							
Client ID:	Run ID: <b>FID-16_415549</b>	SeqNo: <b>6812098</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6108	0.050	0.6	0	102	70 - 130				
TPH (Oil Range)	0.7123	0.10	0.6	0	119	70 - 130				
Surr: 2-Fluorobiphenyl	0.06121	0.0050	0.06	0	102	60 - 135				

<b>LCSD</b>	Sample ID: <b>LCSD-182662</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 14:35</b>							
Client ID:	Run ID: <b>FID-16_415549</b>	SeqNo: <b>6812099</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.6308	0.050	0.6	0	105	70 - 130	0.6108	3.22	20	
TPH (Oil Range)	0.7517	0.10	0.6	0	125	70 - 130	0.7123	5.38	20	
Surr: 2-Fluorobiphenyl	0.06187	0.0050	0.06	0	103	60 - 135	0.06121	1.06	20	

The following samples were analyzed in this batch: HS22081037-11

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> 182668 ( 0 )	<b>Instrument:</b> FID-7	<b>Method:</b> TPH DRO/ORO BY SW8015C
-------------------------------	--------------------------	---------------------------------------

<b>MBLK</b>	Sample ID: <b>MBLK-182668</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>20-Aug-2022 06:06</b>							
Client ID:	Run ID: <b>FID-7_415545</b>	SeqNo: <b>6812050</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	1.7								
TPH (Motor Oil Range)	ND	3.4								
Surr: 2-Fluorobiphenyl	2.946	0.10	3.33	0	88.5	70 - 130				

<b>LCS</b>	Sample ID: <b>LCS-182668</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>20-Aug-2022 06:32</b>							
Client ID:	Run ID: <b>FID-7_415545</b>	SeqNo: <b>6812051</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	34.03	1.7	33.33	0	102	70 - 130				
TPH (Motor Oil Range)	28.08	3.4	33.33	0	84.3	70 - 130				
Surr: 2-Fluorobiphenyl	3.041	0.10	3.33	0	91.3	70 - 130				

<b>MS</b>	Sample ID: <b>HS22081037-01MS</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>19-Aug-2022 22:32</b>							
Client ID: <b>CS-SW-1@2.25'</b>	Run ID: <b>FID-7_415545</b>	SeqNo: <b>6812036</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	45.51	1.7	33.05	15.51	90.8	70 - 130				
TPH (Motor Oil Range)	41.99	3.4	33.05	28.2	41.7	70 - 130				S
Surr: 2-Fluorobiphenyl	3.734	0.099	3.302	0	113	60 - 129				

<b>MSD</b>	Sample ID: <b>HS22081037-01MSD</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>19-Aug-2022 22:58</b>							
Client ID: <b>CS-SW-1@2.25'</b>	Run ID: <b>FID-7_415545</b>	SeqNo: <b>6812056</b>	PrepDate: <b>19-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	46.26	1.7	33.18	15.51	92.7	70 - 130	45.51	1.64	30	
TPH (Motor Oil Range)	39.24	3.4	33.18	28.2	33.3	70 - 130	41.99	6.76	30	S
Surr: 2-Fluorobiphenyl	4.149	0.10	3.315	0	125	60 - 129	3.734	10.5	30	

<b>The following samples were analyzed in this batch:</b>	HS22081037-01	HS22081037-02	HS22081037-03	HS22081037-04
	HS22081037-05	HS22081037-06	HS22081037-07	HS22081037-08
	HS22081037-09	HS22081037-10		

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> R415440 ( 0 )	<b>Instrument:</b> FID-20	<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-220819</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 10:15</b>							
Client ID:	Run ID: <b>FID-20_415440</b>	SeqNo: <b>6810011</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	ND	0.0500								
Surr: 4-Bromofluorobenzene	0.09821	0.00500	0.1	0	98.2	70 - 121				

<b>LCS</b>	Sample ID: <b>LCS-220819</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 09:43</b>							
Client ID:	Run ID: <b>FID-20_415440</b>	SeqNo: <b>6810009</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.8456	0.0500	1	0	84.6	76 - 124				
Surr: 4-Bromofluorobenzene	0.08032	0.00500	0.1	0	80.3	52 - 138				

<b>LCSD</b>	Sample ID: <b>LCSD-220819</b>	Units: <b>mg/L</b>	Analysis Date: <b>19-Aug-2022 09:59</b>							
Client ID:	Run ID: <b>FID-20_415440</b>	SeqNo: <b>6810010</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.907	0.0500	1	0	90.7	76 - 124	0.8456	7.01	20	
Surr: 4-Bromofluorobenzene	0.0862	0.00500	0.1	0	86.2	52 - 138	0.08032	7.05	20	

The following samples were analyzed in this batch: HS22081037-11

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> R415514 ( 0 )	<b>Instrument:</b> FID-14	<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-220821</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>21-Aug-2022 10:47</b>							
Client ID:	Run ID: <b>FID-14_415514</b>	SeqNo: <b>6811398</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	0.09792	0.0050	0.1	0	97.9	75 - 121				

<b>LCS</b>	Sample ID: <b>LCS-220821</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>21-Aug-2022 10:16</b>							
Client ID:	Run ID: <b>FID-14_415514</b>	SeqNo: <b>6811396</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Gasoline Range Organics	0.871	0.050	1	0	87.1	72 - 121				
Surr: 4-Bromofluorobenzene	0.1035	0.0050	0.1	0	103	75 - 121				

<b>LCSD</b>	Sample ID: <b>LCSD-220821</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>21-Aug-2022 10:32</b>							
Client ID:	Run ID: <b>FID-14_415514</b>	SeqNo: <b>6811397</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual

Gasoline Range Organics	0.8259	0.050	1	0	82.6	72 - 121	0.871	5.31	30	
Surr: 4-Bromofluorobenzene	0.09128	0.0050	0.1	0	91.3	75 - 121	0.1035	12.5	30	

The following samples were analyzed in this batch:

HS22081037-01	HS22081037-02	HS22081037-03	HS22081037-05
HS22081037-06	HS22081037-07	HS22081037-08	HS22081037-09
HS22081037-10			

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> R415538 ( 0 )	<b>Instrument:</b> FID-14	<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C
--------------------------------	---------------------------	---

<b>MBLK</b>	Sample ID: <b>MBLK-220822</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>22-Aug-2022 09:46</b>							
Client ID:	Run ID: <b>FID-14_415538</b>	SeqNo: <b>6811952</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	0.09838	0.0050	0.1	0	98.4	75 - 121				

<b>LCS</b>	Sample ID: <b>LCS-220822</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>22-Aug-2022 09:14</b>							
Client ID:	Run ID: <b>FID-14_415538</b>	SeqNo: <b>6811950</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.9843	0.050	1	0	98.4	72 - 121				
Surr: 4-Bromofluorobenzene	0.1086	0.0050	0.1	0	109	75 - 121				

<b>LCSD</b>	Sample ID: <b>LCSD-220822</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>22-Aug-2022 09:30</b>							
Client ID:	Run ID: <b>FID-14_415538</b>	SeqNo: <b>6811951</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.9958	0.050	1	0	99.6	72 - 121	0.9843	1.17	30	
Surr: 4-Bromofluorobenzene	0.09183	0.0050	0.1	0	91.8	75 - 121	0.1086	16.7	30	

The following samples were analyzed in this batch: HS22081037-04

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QC BATCH REPORT**

<b>Batch ID:</b> R415524 ( 0 )		<b>Instrument:</b> Balance1		<b>Method:</b> MOISTURE - ASTM D2216					
<b>DUP</b>	Sample ID: <b>HS22081086-10DUP</b>	Units: <b>wt%</b>		Analysis Date: <b>20-Aug-2022 08:32</b>					
Client ID:	Run ID: <b>Balance1_415524</b>	SeqNo: <b>6811652</b>		PrepDate:		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Percent Moisture	20.2	0.0100					20.6	1.96	20
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The following samples were analyzed in this batch:

HS22081037-01	HS22081037-02	HS22081037-03	HS22081037-04
HS22081037-05	HS22081037-06	HS22081037-07	HS22081037-08
HS22081037-09	HS22081037-10		

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081037

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

<b>Acronym</b>	<b>Description</b>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<b>Unit Reported</b>	<b>Description</b>
mg/L	Milligrams per Liter

ALS Houston, US

Date: 23-Sep-22

**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US

Date: 23-Sep-22

Sample Receipt Checklist

Work Order ID: HS22081037

Date/Time Received: 19-Aug-2022 09:10

Client Name: TRC-AUS

Received by: Pablo Martinez

Completed By: /S/ Pablo Martinez	19-Aug-2022 10:07	Reviewed by: /S/ Dane J. Wacasey	19-Aug-2022 13:40
eSignature	Date/Time	eSignature	Date/Time

Matrices: SOLID/WATER

Carrier name: FedEx Priority Overnight

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes  No  Not Present
- Chain of custody present? Yes  No  2 Page(s)
- Chain of custody signed when relinquished and received? Yes  No  COC IDs:N/A
- Samplers name present on COC? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No

Temperature(s)/Thermometer(s):	0.8°C/1.3°C UC/C	IR 31
Cooler(s)/Kit(s):	BLUE	
Date/Time sample(s) sent to storage:	8/19/22 10:10	
Water - VOA vials have zero headspace?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments: [Empty box]

Corrective Action: [Empty box]



ALS Laboratory Group  
 10450 Stancliff Rd. #210  
 Houston, Texas 77099  
 (Tel) 281.530.5656  
 (Fax) 281.530.5887

### Chain of Custody Form

Page 1 of 2

ALS Laboratory Group  
 3352 128th Avenue  
 Holland, Michigan 49424  
 (Tel) 616.399.6070  
 (Fax) 616.399.6185

Customer Information			ALS Project Manager:				Work Order #:										
Purchase Order			Project Information				Parameter/Method Request for Analysis										
186637			HEP WTX to EMSU				TPH (GRD/ORG/MRO) 8015M										
Work Order			497744														
Company Name: TRC Corporation			BHI To Company: TRC Corporation														
Send Report To: Dana Helbert / Jared Stoffel			Invoice Attn: TRC - AP														
Address: 505 East Huntland Drive Suite 250			Address: 505 East Huntland Drive Suite 250														
City/State/Zip: Austin, TX 78752			City/State/Zip: Austin, TX 78752														
Phone: 713-306-9550			Phone: 512-329-6080														
Fax:			Fax:														
e-Mail Address: dhelbert@trccompanies.com, jstoffel@trccompanies.com			e-Mail Address: apinvoicerequest@trccompanies.com														
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CS-SW-1 @ 2.25'	8/18/2022	1100	SS		1	X										
2	CS-SW-2 @ 2.25'		1105				X										
3	CS-SW-3 @ 2.25'		1110				X										
4	CS-SW-4 @ 2.25'		1115				X										
5	CS-1 @ 4.5'		1120				X										
6	CS-2 @ 4.5'		1125				X										
7	CS-3 @ 4.5'		1130				X										
8	CS-4 @ 4.5'		1135				X										
9	CS-5 @ 4.5'		1140				X										
10	Duplicate - 1						X										

**HS22081037**  
 TRC Corporation  
 HEP WTX to EMSU

Sampler(s): Please Print & Sign		Shipment Method:		Required Turnaround Time:		Results Due Date:	
Misha Bryant Misha Bryant		FedEx		<input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		<input checked="" type="checkbox"/> Other Rush 1-day	
Relinquished by:		Date:	Time:	Received by:		Notes:	
Misha Bryant		8/18/22	1300	[Signature]			
Relinquished by:		Date:	Time:	Received by (Laboratory):		Cooler Temp.	
[Signature]		8/18/22	9:10	[Signature]		0.82	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check Box Below)	
						<input checked="" type="checkbox"/> Level II: Standard QC    TRRP-Checklist <input type="checkbox"/> Level III: Std QC + Raw Data    TRRP Level IV <input type="checkbox"/> Level IV: SW846 CLP-Like Other:	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035							

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

Blue QR3: CPTCS Copyright 2008 by ALS Laboratory Group



ALS Laboratory Group  
 10450 Stancliff Rd. #210  
 Houston, Texas 77099  
 (Tel) 281.530.5656  
 (Fax) 281.530.5887

### Chain of Custody Form

Page 2 of 2

ALS Laboratory Group  
 3352 128th Avenue  
 Holland, Michigan 49424  
 (Tel) 616.399.6070  
 (Fax) 616.399.6185

Customer Information			ALS Project Manager:				Work Order #:										
Purchase Order		Project Name		Parameter/Method Request for Analysis													
186637		HEP WTX to EMSU		A TPH (GR/DRE/MBC) 8015M													
Work Order		Project Number		B													
TRC Corporation		497744		C													
Company Name		TRC Corporation		D													
Send Report To		TRC - AP		E													
Dana Heibert / Jared Stoffel		Invoice Attn.		F													
Address		Address		G													
505 East Huntland Drive		505 East Huntland Drive		H													
Suite 250		Suite 250		I													
City/State/Zip		City/State/Zip		J													
Austin, TX 78752		Austin, TX 78752															
Phone		Phone															
713-306-9550		512-329-6080															
Fax		Fax															
e-Mail Address		e-Mail Address															
dheibert@trccompanies.com, jstoffel@trccompanies.com		apinvoicereapproval@trccompanies.com															
No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	EB-20220818	8/18/2022	1230	W	-	3	X										
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

**HS22081037**  
 TRC Corporation  
 HEP WTX to EMSU

Sampler(s): Please Print & Sign <i>Mitch Bryant</i>		Shipment Method:		Required Turnaround Time: <input type="checkbox"/> STD 10 WK Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour <input checked="" type="checkbox"/> Other <i>Asst 2-Dry</i>		Results Due Date:	
Relinquished by: <i>Mitch Bryant</i>		Date: 8/8/2022	Time: 1300	Received by:		Notes:	
Relinquished by:		Date: 8/18/22	Time: 9:10	Received by (Laboratory): <i>[Signature]</i>		Cooler Temp. <i>0-20</i>	
Logged by (Laboratory):		Date:	Time:	Checked by (Laboratory):		QC Package: (Check Box Below)	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035						<input checked="" type="checkbox"/> Level II: Standard QC    TRRP-Checklist <input type="checkbox"/> Level III: Std QC + Raw Data    TRRP Level IV <input type="checkbox"/> Level IV: SW846 CLP-Like Other:	

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group. Copyright 2008 by ALS Laboratory Group

*Blue Ink used*

TRK# 2769 5238 8717 FRI - 19 AUG 10:30A  
0201 PRIORITY OVERNIGHT

**AB SGRA** Blue 77099  
TX-US IAH





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10450 Stancliff Rd. Suite 210  
Houston, TX 77099  
T: +1 281 530 5656  
F: +1 281 530 5887

September 23, 2022

Dana Helbert  
TRC Corporation  
505 East Huntland Drive  
Suite 250  
Austin, TX 78752

Work Order: **HS22081424**

Laboratory Results for: **HEP WTX to EMSU Soil**

Dear Dana Helbert,

ALS Environmental received 5 sample(s) on Aug 26, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy C. Neir'.

Generated By: ANDREW.NEIR  
Andy C. Neir

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**Work Order:** HS22081424

**SAMPLE SUMMARY**

---

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22081424-01	CS-SW-3a@2.25'	Solid		25-Aug-2022 12:00	26-Aug-2022 09:16	<input type="checkbox"/>
HS22081424-02	CS-SW-3b@2.25'	Soil		25-Aug-2022 12:05	26-Aug-2022 09:16	<input checked="" type="checkbox"/>
HS22081424-03	CS-SW-3c@2.25'	Soil		25-Aug-2022 12:10	26-Aug-2022 09:16	<input checked="" type="checkbox"/>
HS22081424-04	CS-6@4.5'	Solid		25-Aug-2022 13:00	26-Aug-2022 09:16	<input type="checkbox"/>
HS22081424-05	CS-7@4.5'	Solid		25-Aug-2022 13:05	26-Aug-2022 09:16	<input type="checkbox"/>

---

**ALS Houston, US**

Date: 23-Sep-22

---

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**Work Order:** HS22081424

---

**CASE NARRATIVE**

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**GC Semivolatiles by Method SW8015M**

**Batch ID: 182923**

**Sample ID: CS-6@4.5' (HS22081424-04)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

**Sample ID: HS22081229-03MS**

- MS and MSD are for an unrelated sample
- 

**GC Volatiles by Method SW8015**

**Batch ID: R415944**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
- 

**WetChemistry by Method ASTM D2216**

**Batch ID: R416035**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.
-

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-SW-3a@2.25'  
 Collection Date: 25-Aug-2022 12:00

**ANALYTICAL REPORT**

WorkOrder:HS22081424  
 Lab ID:HS22081424-01  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	26-Aug-2022 12:53
Surr: 4-Bromofluorobenzene	109		70-123	%REC	1	26-Aug-2022 12:53
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 26-Aug-2022		Analyst: PPM
TPH (Diesel Range)	2.3		1.7	mg/Kg	1	26-Aug-2022 22:42
TPH (Motor Oil Range)	5.8	n	3.4	mg/Kg	1	26-Aug-2022 22:42
Surr: 2-Fluorobiphenyl	65.5		60-129	%REC	1	26-Aug-2022 22:42
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	1.85		0.0100	wt%	1	26-Aug-2022 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-6@4.5'  
 Collection Date: 25-Aug-2022 13:00

**ANALYTICAL REPORT**

WorkOrder:HS22081424  
 Lab ID:HS22081424-04  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	26-Aug-2022 13:09
Surr: 4-Bromofluorobenzene	93.9		70-123	%REC	1	26-Aug-2022 13:09
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 26-Aug-2022		Analyst: PPM
TPH (Diesel Range)	690		170	mg/Kg	100	26-Aug-2022 23:08
TPH (Motor Oil Range)	1,800	n	340	mg/Kg	100	26-Aug-2022 23:08
Surr: 2-Fluorobiphenyl	0	JS	60-129	%REC	100	26-Aug-2022 23:08
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	6.36		0.0100	wt%	1	26-Aug-2022 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

**ALS Houston, US**

Date: 23-Sep-22

Client: TRC Corporation  
 Project: HEP WTX to EMSU Soil  
 Sample ID: CS-7@4.5'  
 Collection Date: 25-Aug-2022 13:05

**ANALYTICAL REPORT**

WorkOrder:HS22081424  
 Lab ID:HS22081424-05  
 Matrix:Solid

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
<b>GASOLINE RANGE ORGANICS BY SW8015C</b>		<b>Method:SW8015</b>				Analyst: FT
Gasoline Range Organics	ND		0.050	mg/Kg	1	26-Aug-2022 13:25
Surr: 4-Bromofluorobenzene	93.5		70-123	%REC	1	26-Aug-2022 13:25
<b>TPH DRO/ORO BY SW8015C</b>		<b>Method:SW8015M</b>		Prep:SW3541 / 26-Aug-2022		Analyst: PPM
TPH (Diesel Range)	4.7		1.7	mg/Kg	1	26-Aug-2022 23:35
TPH (Motor Oil Range)	7.3	n	3.4	mg/Kg	1	26-Aug-2022 23:35
Surr: 2-Fluorobiphenyl	75.3		60-129	%REC	1	26-Aug-2022 23:35
<b>MOISTURE - ASTM D2216</b>		<b>Method:ASTM D2216</b>				Analyst: FO
Percent Moisture	7.31		0.0100	wt%	1	26-Aug-2022 11:37

Note: See Qualifiers Page for a list of qualifiers and their explanation.

ALS Houston, US

Date: 23-Sep-22

Weight / Prep Log

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081424

<b>Batch ID:</b> 5296	<b>Start Date:</b> 26 Aug 2022 11:24	<b>End Date:</b> 26 Aug 2022 11:24
<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C		<b>Prep Code:</b>

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081424-01	1	4.995 (g)	5 (mL)	1	Bulk (5030B)
HS22081424-04	1	4.999 (g)	5 (mL)	1	Bulk (5030B)
HS22081424-05	1	5.013 (g)	5 (mL)	1	Bulk (5030B)

<b>Batch ID:</b> 182923	<b>Start Date:</b> 26 Aug 2022 09:00	<b>End Date:</b> 26 Aug 2022 13:00
<b>Method:</b> SOPREP: 3541 TPH		<b>Prep Code:</b> 8015SPR_LL

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081424-01		30.01 (g)	1 (mL)	0.03332	4-oz glass, Neat
HS22081424-04		30.14 (g)	1 (mL)	0.03318	4-oz glass, Neat
HS22081424-05		30.32 (g)	1 (mL)	0.03298	4-oz glass, Neat

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081424

**DATES REPORT**

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
<b>Batch ID:</b> 182923 ( 0 )		<b>Test Name :</b> TPH DRO/ORO BY SW8015C			<b>Matrix:</b> Solid	
HS22081424-01	CS-SW-3a@2.25'	25 Aug 2022 12:00		26 Aug 2022 09:00	26 Aug 2022 22:42	1
HS22081424-04	CS-6@4.5'	25 Aug 2022 13:00		26 Aug 2022 09:00	26 Aug 2022 23:08	100
HS22081424-05	CS-7@4.5'	25 Aug 2022 13:05		26 Aug 2022 09:00	26 Aug 2022 23:35	1
<b>Batch ID:</b> R415944 ( 0 )		<b>Test Name :</b> GASOLINE RANGE ORGANICS BY SW8015C			<b>Matrix:</b> Solid	
HS22081424-01	CS-SW-3a@2.25'	25 Aug 2022 12:00			26 Aug 2022 12:53	1
HS22081424-04	CS-6@4.5'	25 Aug 2022 13:00			26 Aug 2022 13:09	1
HS22081424-05	CS-7@4.5'	25 Aug 2022 13:05			26 Aug 2022 13:25	1
<b>Batch ID:</b> R416035 ( 0 )		<b>Test Name :</b> MOISTURE - ASTM D2216			<b>Matrix:</b> Solid	
HS22081424-01	CS-SW-3a@2.25'	25 Aug 2022 12:00			26 Aug 2022 11:37	1
HS22081424-04	CS-6@4.5'	25 Aug 2022 13:00			26 Aug 2022 11:37	1
HS22081424-05	CS-7@4.5'	25 Aug 2022 13:05			26 Aug 2022 11:37	1

**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081424

**QC BATCH REPORT**

<b>Batch ID:</b> 182923 ( 0 )	<b>Instrument:</b> FID-7	<b>Method:</b> TPH DRO/ORO BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-182923</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 20:03</b>							
Client ID:	Run ID: <b>FID-7_416031</b>	SeqNo: <b>6824164</b>	PrepDate: <b>26-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	1.7								
TPH (Motor Oil Range)	ND	3.4								
Surr: 2-Fluorobiphenyl	2.35	0.10	3.33	0	70.6	70 - 130				

<b>LCS</b>	Sample ID: <b>LCS-182923</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 20:29</b>							
Client ID:	Run ID: <b>FID-7_416031</b>	SeqNo: <b>6824165</b>	PrepDate: <b>26-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	27.62	1.7	33.33	0	82.9	70 - 130				
TPH (Motor Oil Range)	23.34	3.4	33.33	0	70.0	70 - 130				
Surr: 2-Fluorobiphenyl	2.376	0.10	3.33	0	71.4	70 - 130				

<b>MS</b>	Sample ID: <b>HS22081229-03MS</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 21:49</b>							
Client ID:	Run ID: <b>FID-7_416031</b>	SeqNo: <b>6824168</b>	PrepDate: <b>26-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	50.95	1.7	32.98	3.291	145	70 - 130				S
TPH (Motor Oil Range)	47.81	3.4	32.98	9.435	116	70 - 130				
Surr: 2-Fluorobiphenyl	4.022	0.099	3.295	0	122	60 - 129				

<b>MSD</b>	Sample ID: <b>HS22081229-03MSD</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 22:15</b>							
Client ID:	Run ID: <b>FID-7_416031</b>	SeqNo: <b>6824169</b>	PrepDate: <b>26-Aug-2022</b> DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	31.5	1.7	33.18	3.291	85.0	70 - 130	50.95	47.2	30	R
TPH (Motor Oil Range)	33.14	3.4	33.18	9.435	71.5	70 - 130	47.81	36.3	30	R
Surr: 2-Fluorobiphenyl	2.583	0.10	3.315	0	77.9	60 - 129	4.022	43.6	30	R

The following samples were analyzed in this batch: HS22081424-01 HS22081424-04 HS22081424-05

ALS Houston, US

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081424

**QC BATCH REPORT**

<b>Batch ID:</b> R415944 ( 0 )	<b>Instrument:</b> FID-14	<b>Method:</b> GASOLINE RANGE ORGANICS BY SW8015C
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<b>MBLK</b>	Sample ID: <b>MBLK-220826</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 12:37</b>							
Client ID:	Run ID: <b>FID-14_415944</b>	SeqNo: <b>6821936</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	ND	0.050								
Surr: 4-Bromofluorobenzene	0.09843	0.0050	0.1	0	98.4	75 - 121				

<b>LCS</b>	Sample ID: <b>LCS-220826</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 12:06</b>							
Client ID:	Run ID: <b>FID-14_415944</b>	SeqNo: <b>6821934</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.9356	0.050	1	0	93.6	72 - 121				
Surr: 4-Bromofluorobenzene	0.1029	0.0050	0.1	0	103	75 - 121				

<b>LCSD</b>	Sample ID: <b>LCSD-220826</b>	Units: <b>mg/Kg</b>	Analysis Date: <b>26-Aug-2022 12:21</b>							
Client ID:	Run ID: <b>FID-14_415944</b>	SeqNo: <b>6821935</b>	PrepDate: DF: <b>1</b>							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Gasoline Range Organics	0.9752	0.050	1	0	97.5	72 - 121	0.9356	4.15	30	
Surr: 4-Bromofluorobenzene	0.09855	0.0050	0.1	0	98.6	75 - 121	0.1029	4.32	30	

The following samples were analyzed in this batch: 

HS22081424-01	HS22081424-04	HS22081424-05
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ALS Houston, US

Date: 23-Sep-22

Client: TRC Corporation  
Project: HEP WTX to EMSU Soil  
WorkOrder: HS22081424

QC BATCH REPORT

Batch ID: R416035 ( 0 )		Instrument: Balance1		Method: MOISTURE - ASTM D2216						
DUP	Sample ID: HS22081366-04DUP	Units: wt%		Analysis Date: 26-Aug-2022 11:37						
Client ID:	Run ID: Balance1_416035	SeqNo: 6824230		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Percent Moisture	20.6	0.0100					21.2	2.87	20
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The following samples were analyzed in this batch:

HS22081424-01	HS22081424-04	HS22081424-05
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**ALS Houston, US**

Date: 23-Sep-22

**Client:** TRC Corporation  
**Project:** HEP WTX to EMSU Soil  
**WorkOrder:** HS22081424

**QUALIFIERS,  
ACRONYMS, UNITS**

<b>Qualifier</b>	<b>Description</b>
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

<b>Acronym</b>	<b>Description</b>
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

<b>Unit Reported</b>	<b>Description</b>
mg/L	Milligrams per Liter

ALS Houston, US

Date: 23-Sep-22

**CERTIFICATIONS,ACCREDITATIONS & LICENSES**

<b>Agency</b>	<b>Number</b>	<b>Expire Date</b>
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

ALS Houston, US

Date: 23-Sep-22

Sample Receipt Checklist

Work Order ID: HS22081424

Date/Time Received: 26-Aug-2022 09:16

Client Name: TRC-AUS

Received by: Corey Grandits

Completed By: /S/ Nelson D. Dusara	26-Aug-2022 10:22	Reviewed by: /S/ Dane J. Wacasey	26-Aug-2022 11:01
eSignature	Date/Time	eSignature	Date/Time

Matrices: SOIL

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes  No  Not Present
- Custody seals intact on shipping container/cooler? Yes  No  Not Present
- Custody seals intact on sample bottles? Yes  No  Not Present
- VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes  No  Not Present
- Chain of custody present? Yes  No  1 Page(s)
- Chain of custody signed when relinquished and received? Yes  No  COC IDs:n/a
- Samplers name present on COC? Yes  No
- Chain of custody agrees with sample labels? Yes  No
- Samples in proper container/bottle? Yes  No
- Sample containers intact? Yes  No
- Sufficient sample volume for indicated test? Yes  No
- All samples received within holding time? Yes  No
- Container/Temp Blank temperature in compliance? Yes  No

Temperature(s)/Thermometer(s):	2.9/2.7 C UC/C	IR 31
Cooler(s)/Kit(s):	RED	
Date/Time sample(s) sent to storage:	AUG/26/22 09:45	
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/> No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/> No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:		

Login Notes:

Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

Corrective Action:



ALS Laboratory Group  
 10450 Stancliff Rd. #210  
 Houston, Texas 77099  
 (Tel) 281.530.5656  
 (Fax) 281.530.5887

### Chain of Custody Form

Page 1 of 1

ALS Laboratory Group  
 3352 128th Avenue  
 Holland, Michigan 49424  
 (Tel) 616.399.6070  
 (Fax) 616.399.6185

<b>Customer Information</b>		<b>ALS Project Manager:</b>		<b>Work Order #:</b>	
<b>Project Information</b>		<b>Parameter/Method Request for Analysis</b>			
Purchase Order	186637	Project Name	HEP WTX to EMSU	A	TPH (GRO/DRO/MRO) 8015M  <b>HS22081424</b> TRC Corporation HEP WTX to EMSU Soil 
Work Order		Project Number	497744	B	
Company Name	TRC Corporation	Bill To Company	TRC Corporation	C	
Send Report To	Dana Helbert / Jared Stoffel	Invoice Attn.	TRC - AP	D	
Address	505 East Huntland Drive	Address	505 East Huntland Drive	E	
	Suite 250		Suite 250	F	
City/State/Zip	Austin, TX 78752	City/State/Zip	Austin, TX 78752	G	
Phone	713-306-9550	Phone	512-329-6080	H	
Fax		Fax		I	
e-Mail Address	dhelbert@trccompanies.com jstoffel@trccompanies.com	e-Mail Address	apinvoiceapproval@trccompanies.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	CS-SW-3a @ 2.25'	8-25-22	1200	SS		1	X										
2	CS-SW-3b @ 2.25'		1205				X										
3	CS-SW-3c @ 2.25'		1210				X										X
4	CS-6 @ 4.5'		1300				X										
5	CS-7 @ 4.5'		1305				X										
6																	
7																	
8																	
9																	
10																	

<b>Sampler(s): Please Print &amp; Sign</b> Misti Bryant		<b>Shipment Method:</b>		<b>Required Turnaround Time:</b> <input type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input checked="" type="checkbox"/> 24 Hour <input type="checkbox"/> Other _____		<b>Results Due Date:</b>	
<b>Relinquished by:</b> Misti Bryant	<b>Date:</b> 8-25-22	<b>Time:</b> 1310	<b>Received by:</b> LORIAN BROWN		<b>Notes:</b> Sample NO 2 & 3 Hold NO.1 - 24 hr push Sample NO 4 & 5 - 5 day TAT		
<b>Relinquished by:</b>	<b>Date:</b>	<b>Time:</b>	<b>Received by (Laboratory):</b>		<b>Cooler Temp.:</b> 2.9°C		
<b>Logged by (Laboratory):</b>	<b>Date:</b>	<b>Time:</b>	<b>Checked by (Laboratory):</b>		<b>QC Package: (Check Box Below)</b>		
<b>Preservative Key:</b> 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035					<input checked="" type="checkbox"/> Level II: Standard QC    TRRP-Checklist <input type="checkbox"/> Level III: Std QC + Raw Data    TRRP Level IV <input type="checkbox"/> Level IV: SW846 CLP-Like Other: _____		

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Laboratory Group.

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ORIGIN ID: H0A (999) 999-9999	SHIP DATE: 25AUG22
T R C ENVIRONMENTAL CORP	ACTWGT: 42.15 LB
505 E HUNTLAND DR STE 250	CAD: 6994245/SSFE2322
	DIMS: 23x13x14 IN
AUSTIN, TX 78752	BILL THIRD PARTY
UNITED STATES US	

Part # 156297-435, 6909, EXP 02/23  
02/23/2023

**U.S. LABORATORY**  
**U.S. LABORATORY**  
 10450 S ANCLIFF RD  
 STE 210  
 HOUSTON, TX 77099  
 (703) 662-4900

*Rec'd*  
*08/26*  
*ND*



TRK# 2772 1814 2404  
 [0201]

FRI - 26 AUG 10:30A  
 PRIORITY OVERNIGHT

**APPENDIX E**  
**DISPOSAL TICKETS AND TRANSPORTER MANIFESTS**

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-22  
Generator: Holly Energy PARTNERS  
Job #: J&L # 2680  
Trucking Co: Vaquera's for MATA # 108  
Site Location: WTX to EMSU BATT  
Total Yards/Day: 20 yds exp / 80  
Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-22

Generator: Holly Energy Partners

Job #: J&L # 7680

Trucking Co: # 117 Poreas For Mata

Site Location: WTX To EMSH BATT

Total Yards/Day: (20 yds ea) 1 80

Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-22

Generator: Holly Energy Partners

Job #: J&L # 2680

Trucking Co: #49 NATA

Site Location: WTX to EMSU Batt.

Total Yards/Day: (20 yds ea) 80

Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-27

Generator: Holly Energy Pastures

Job #: PL # 2680

Trucking Co: MATA # 111

Site Location: WTX to EMSU Batt.

Total Yards/Day: (20 yds ea) 1 80

Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-22

Generator: Holly Enosky PARTNERS

Job #: J&L # 2680

Trucking Co: Matta # 40

Site Location: WTX to EMSU BATT.

Total Yards/Day: (20yd/cy) 80

Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 8-19-22  
Generator: Holly Energy Partners  
Job #: J&L # 2680  
Trucking Co: MATA # 106  
Site Location: W TX TO EMSU BATT.  
Total Yards/Day: (20 yd ea) 1 80  
Landfarm Representative: David Jett

J&L Landfarm Inc

PO Box 356

Hobbs, NM 88241

575-369-9730 – David Jett

575-390-7446 – Michelle Kuhn

Permit# NM-01-0023

Date: 9-1-22

Generator: Holly Energy Partners

Job #: J&L # 2687 (Added on from 2680)

Trucking Co: M. Mata # 40

Site Location: WTX to EMSU BATT.

Total Yards/Day: 40 yds

Landfarm Representative: David Jett

TRANSPORTER'S MANIFEST

SHIPPERS FACILITY NAME AND ADDRESS:

Holly Energy Partners  
1602 W. Main Street  
Artesia, NM88210

LOCATION OF MATERIAL:

Site: WTX to EMSU Battery  
Location: 32.583874, -103.317460  
Lea County, New Mexico  
NMPA: N/A

TRANSPORTERS NAME AND ADDRESS:

M Mata Trucking,  
PO BOX 1263,  
Hobbs, NM, 88241

DESCRIPTION OF WASTE:

E&P NON-EXEMPT SOIL: 300 cubic  
yards

FACILITY CONTACT:

Melanie Nolan  
Holly Energy Partners  
1602 W. Main St., Artesia, NM88210

Signature: Melanie Nolan

Date: 8/18/22

NAME OF TRANSPORTER: (DRIVER)

M Mata Trucking,  
PO BOX 1263,  
Hobbs, NM, 88241

TRUCK # 40

Name: Melanie Mata

Signature: Melanie Mata

Date: 9-1-22

DISPOSAL SITE:

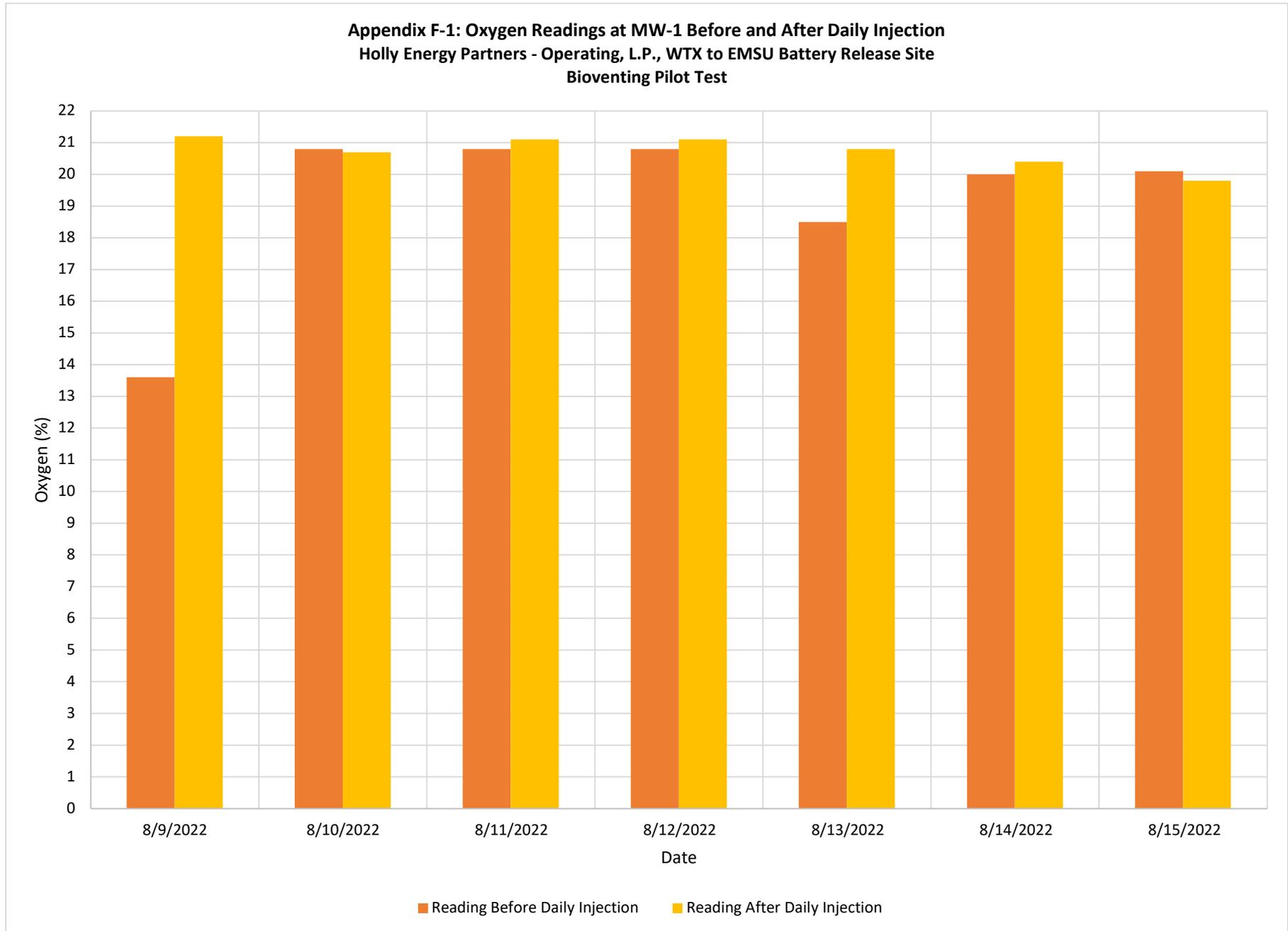
J&L Landfarm  
County Road 45  
Hobbs, NM88240

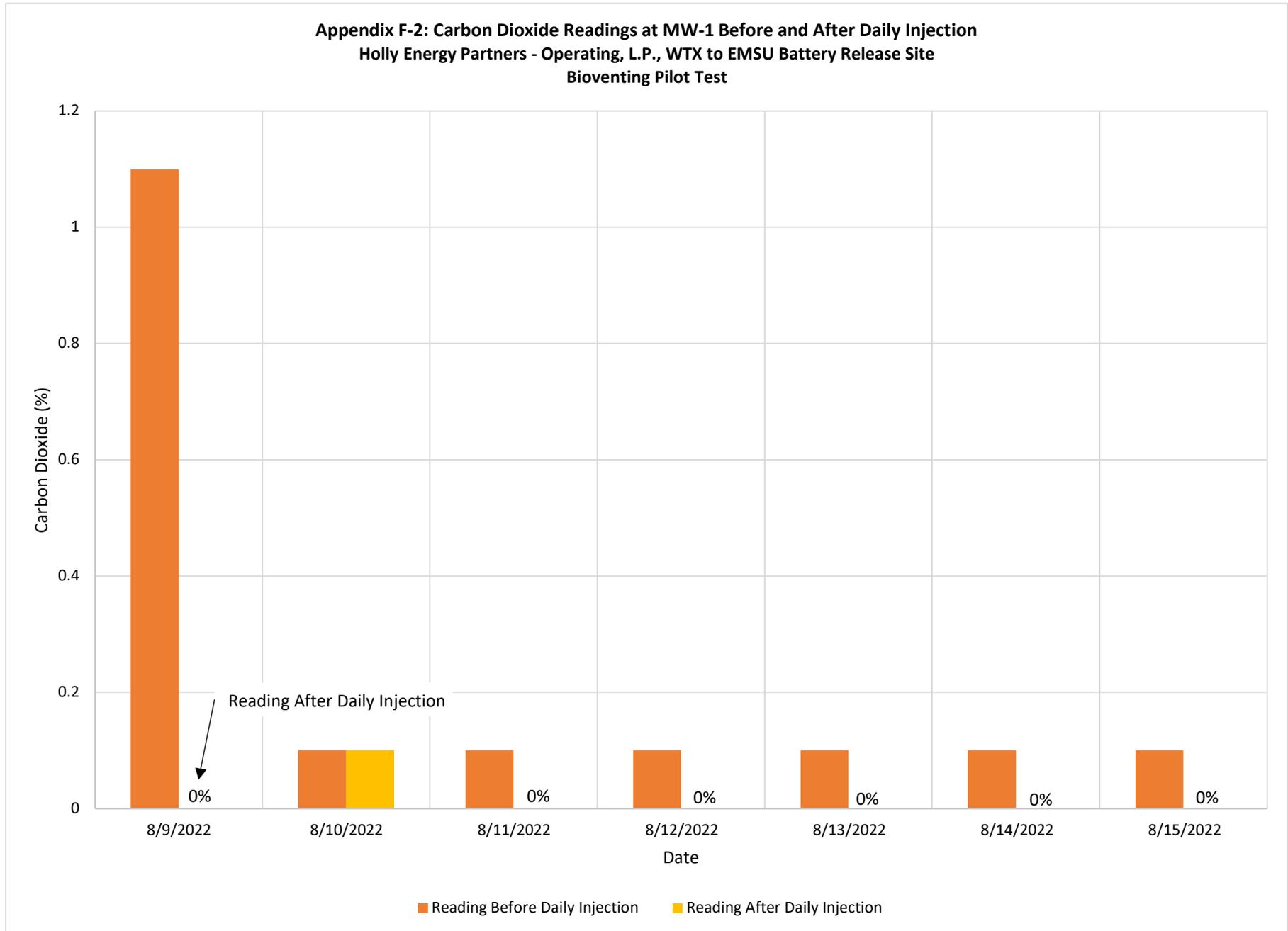
Signature: David J...

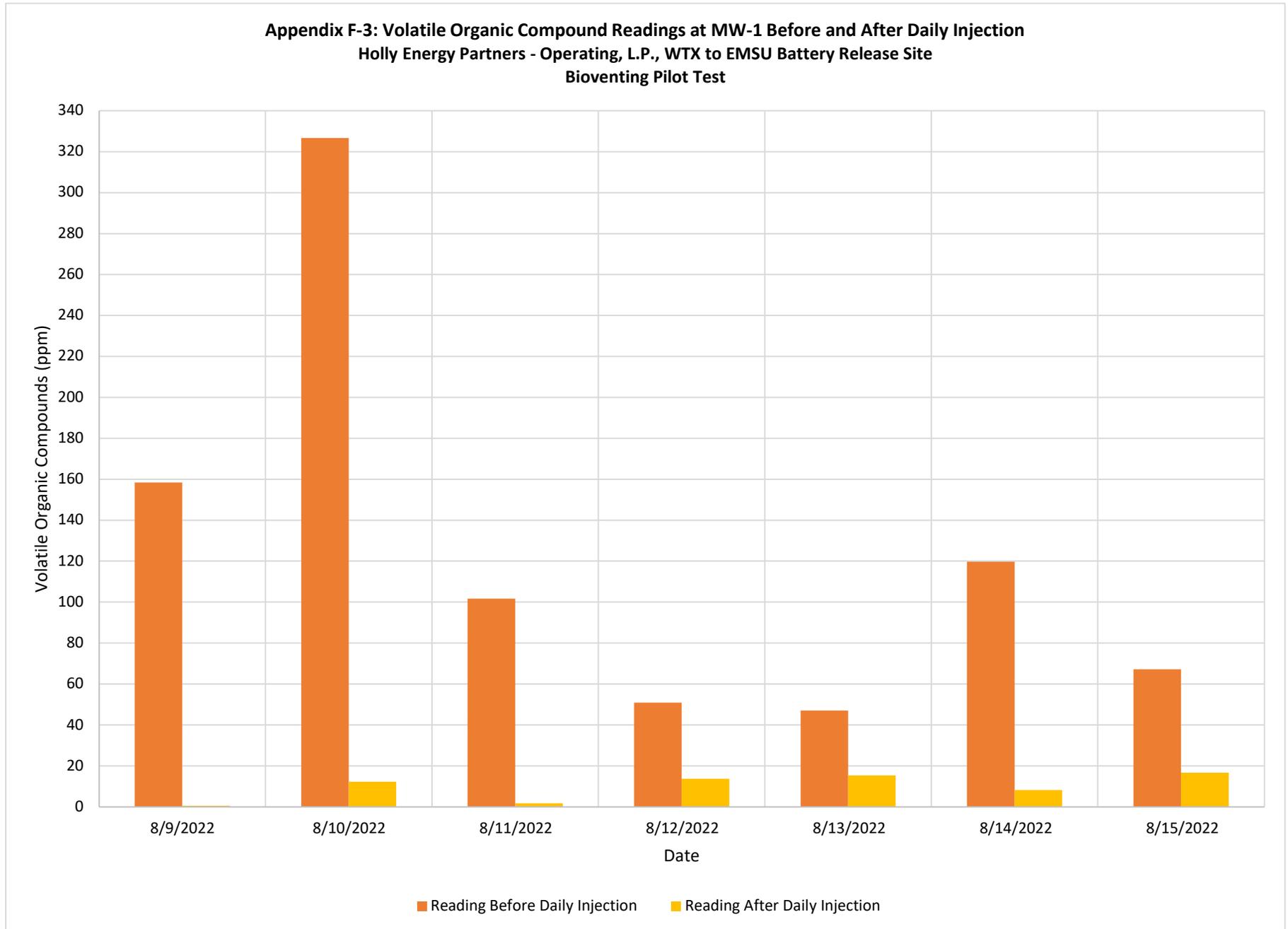
Date: 9-1-22

Direct Bill: Holly Energy Partners  
Care Of: Melanie Nolan

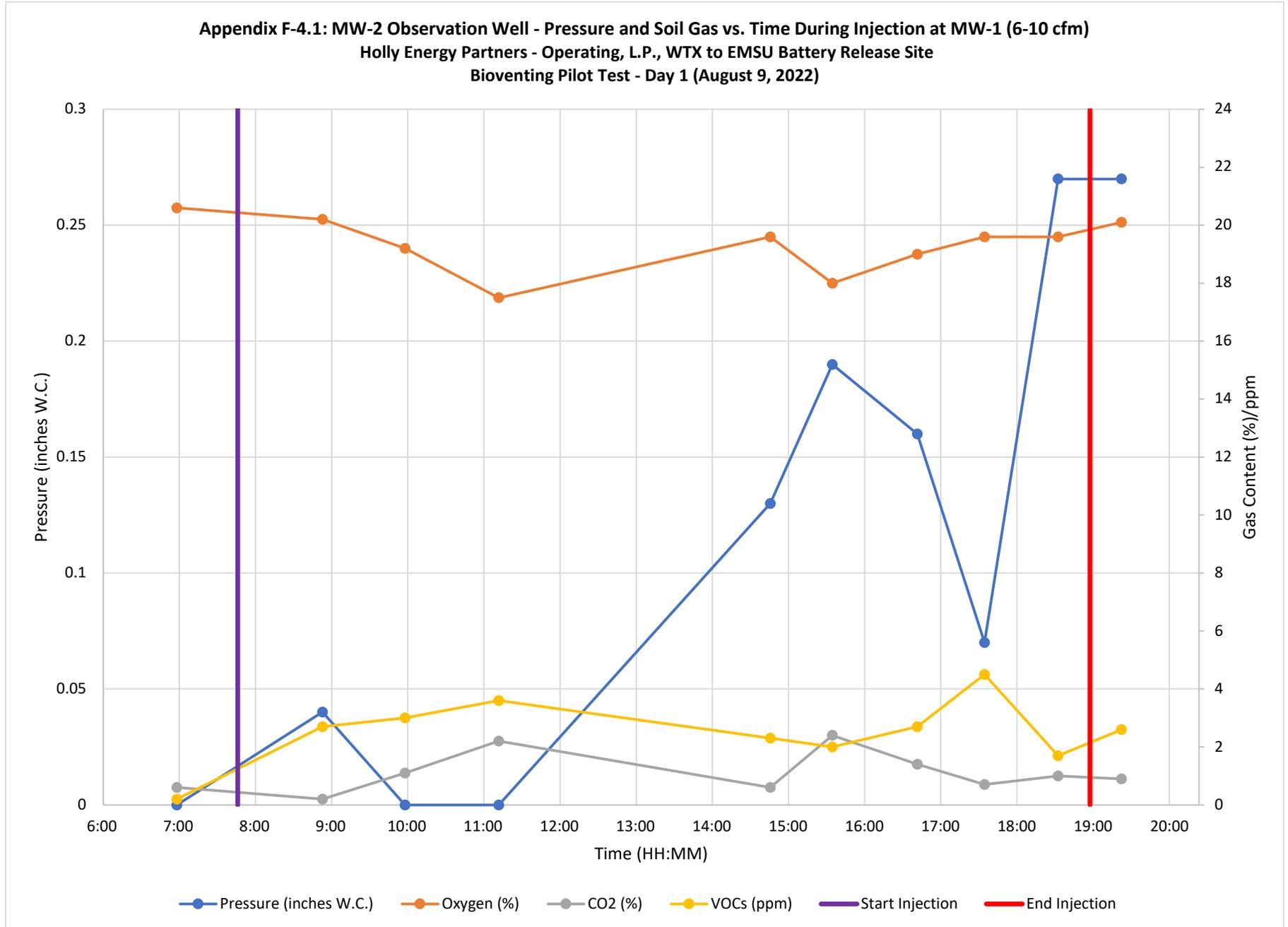
**APPENDIX F**  
**BIOVENTING PILOT TEST PLOTS**

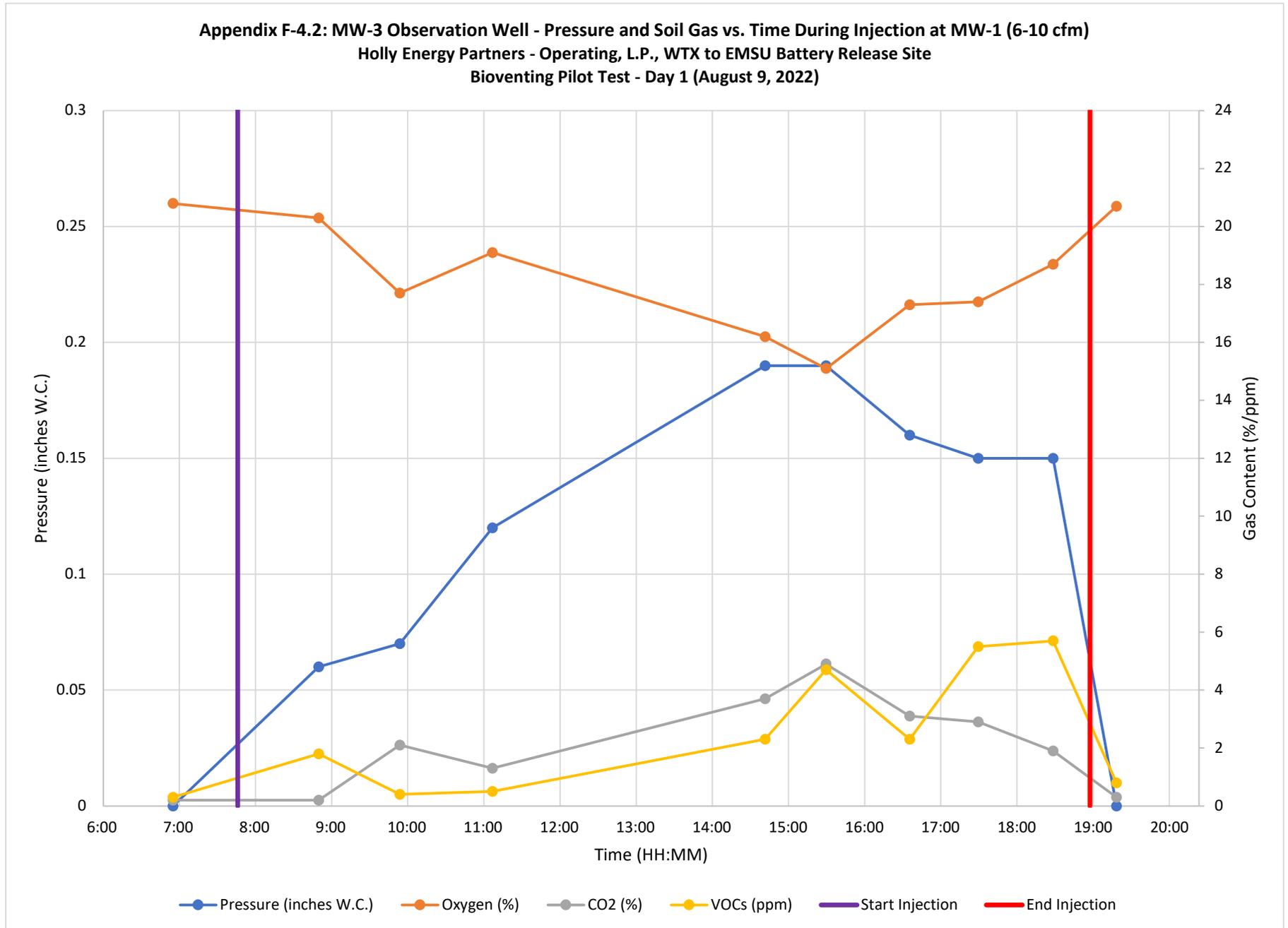


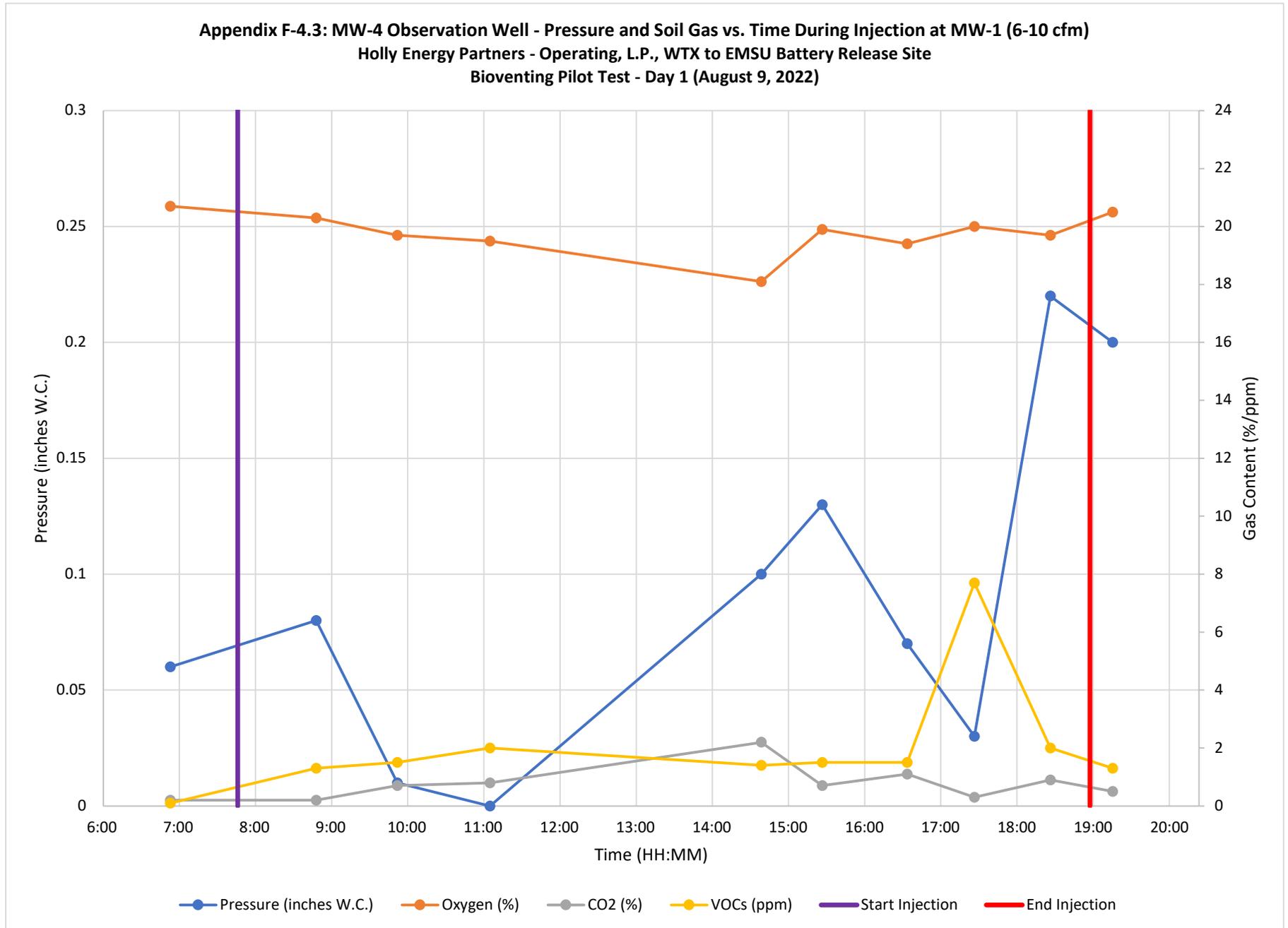


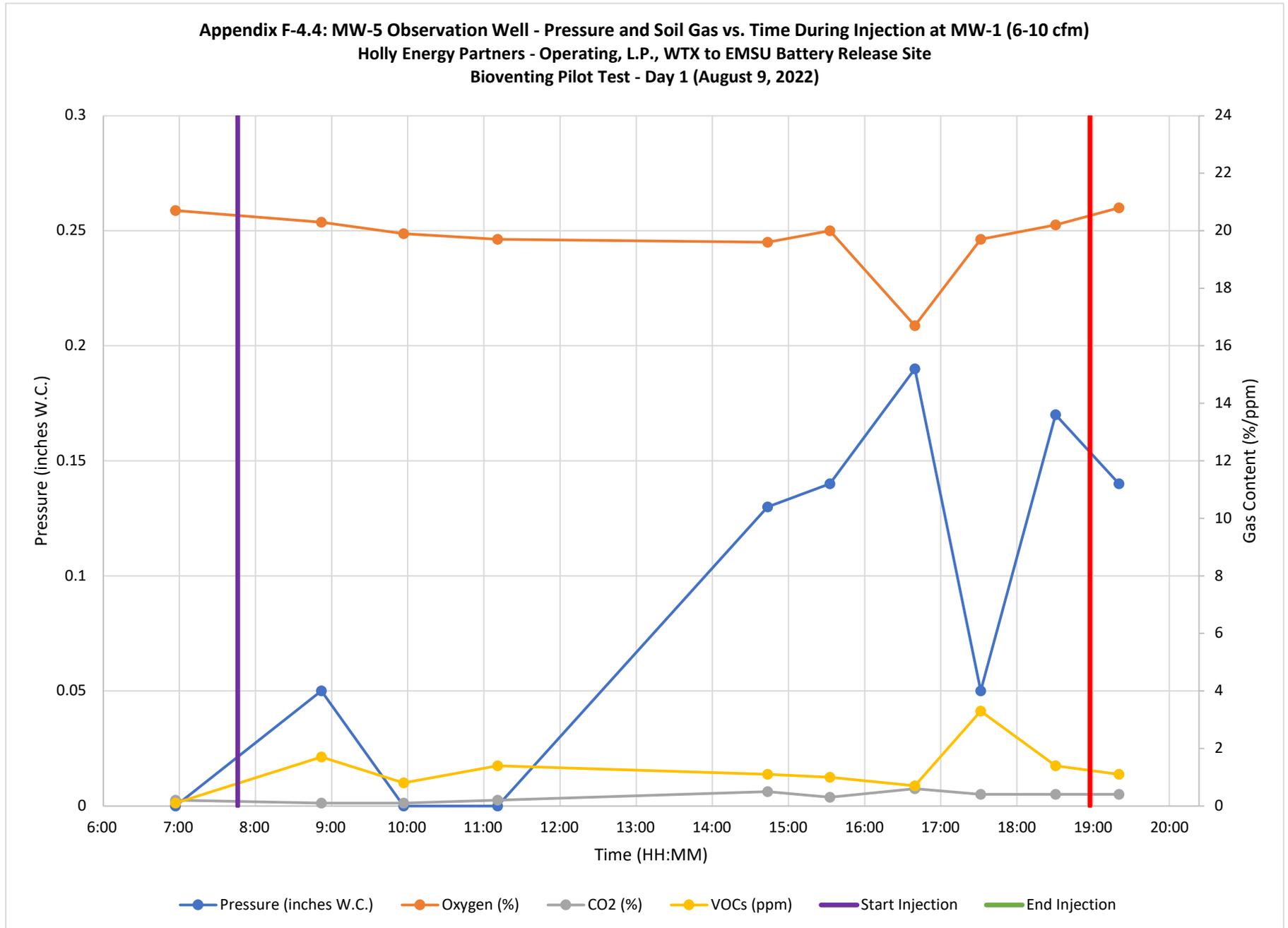


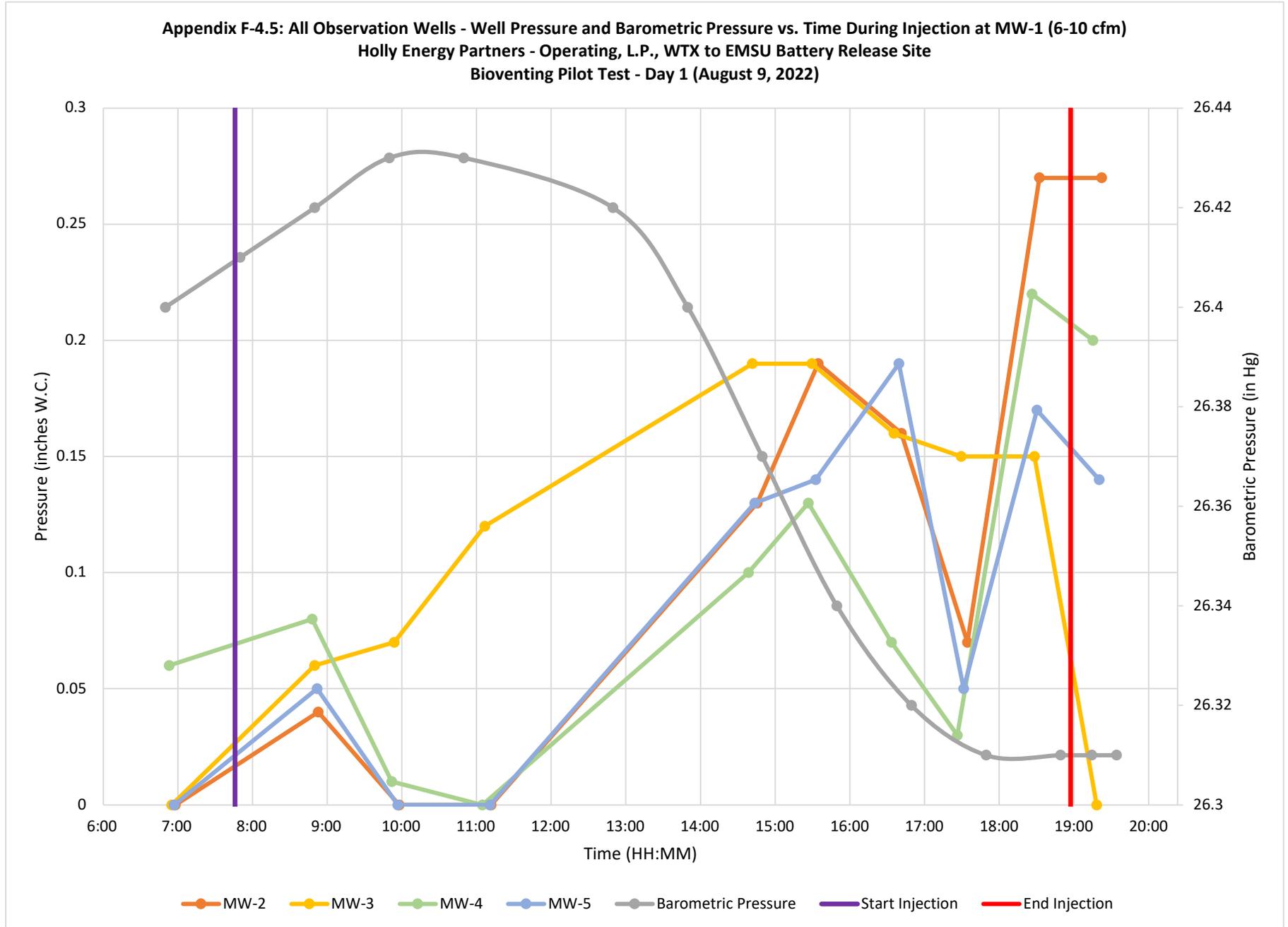
**Day 1 (August 9, 2022)**



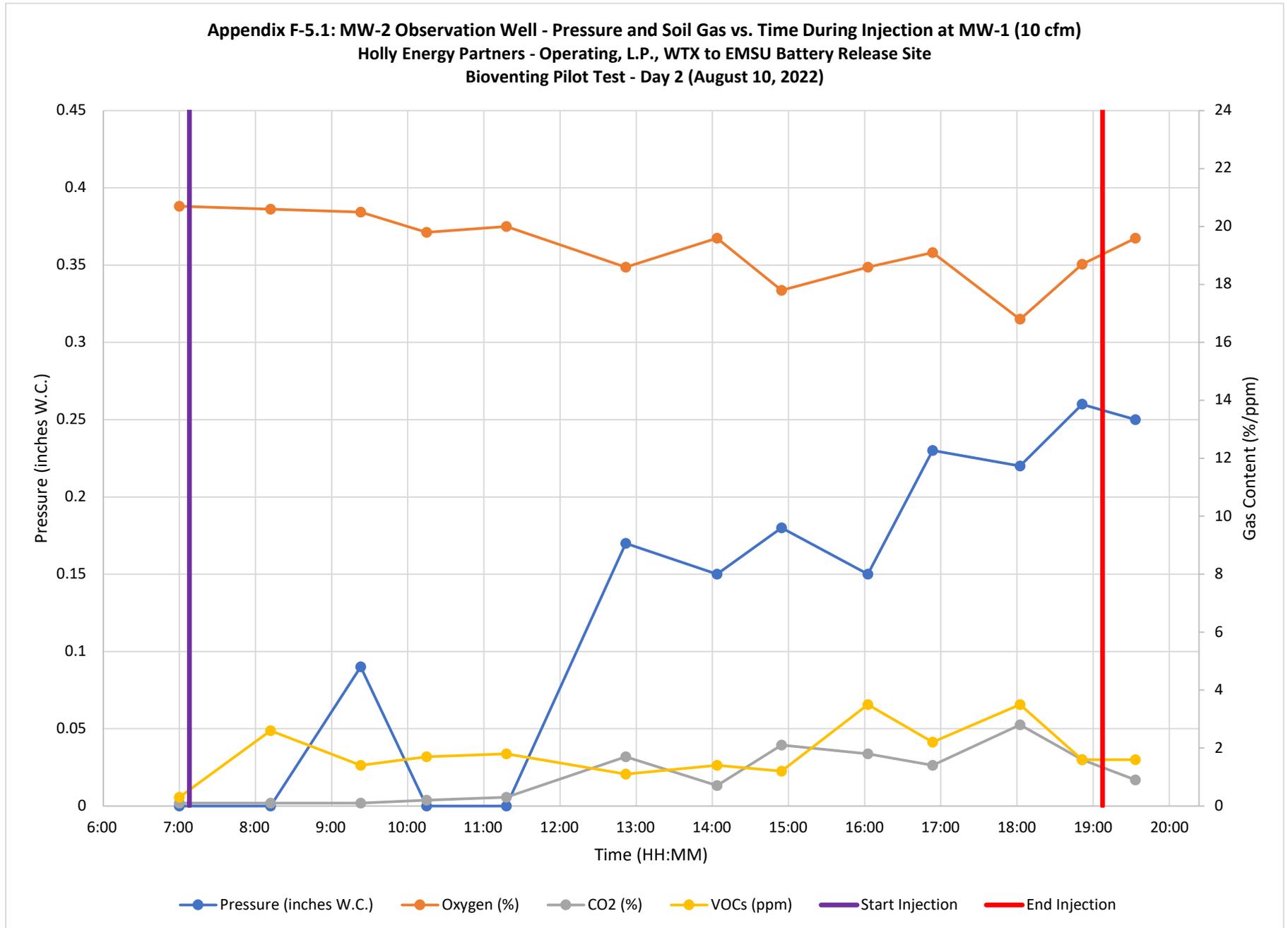


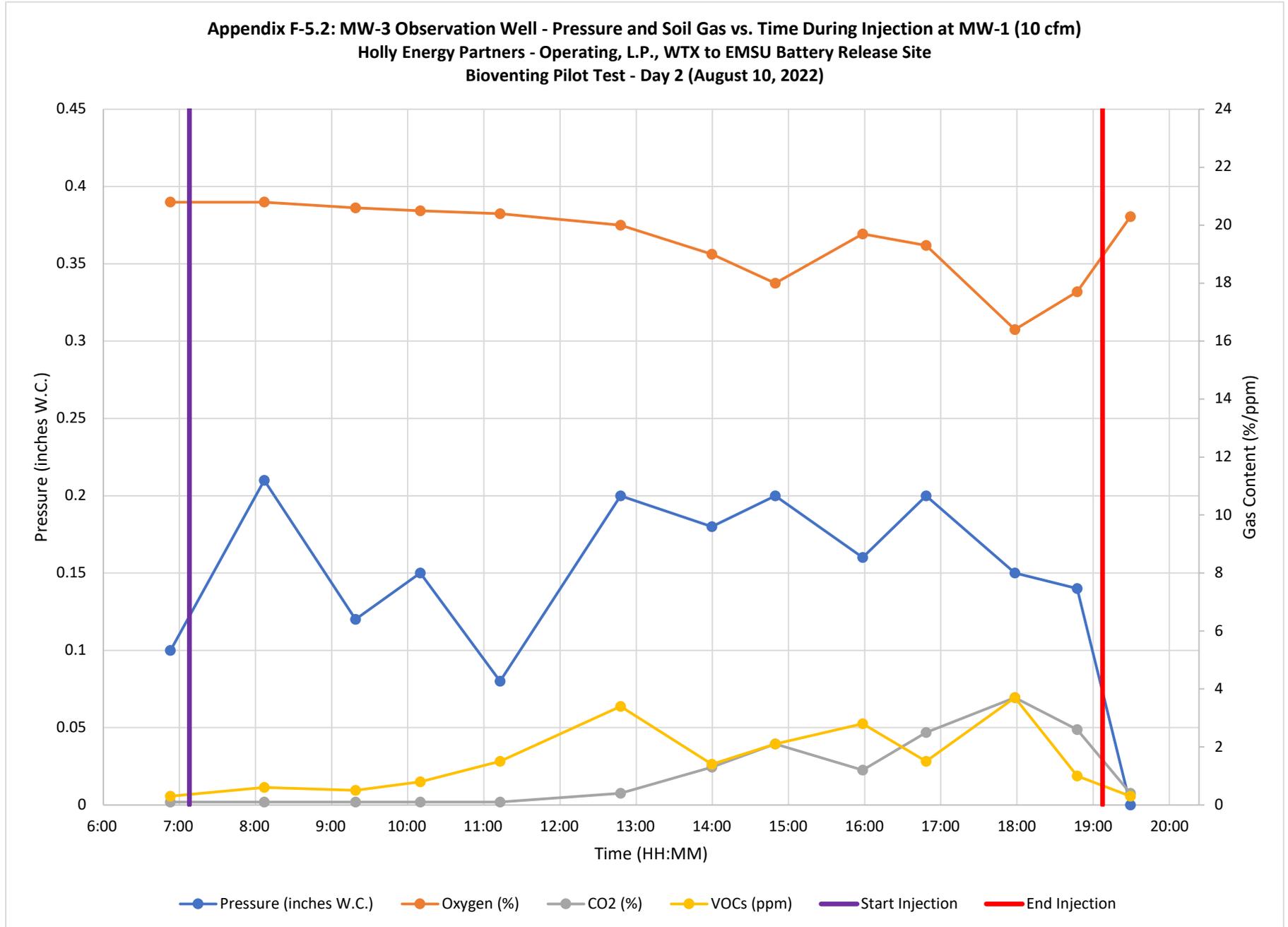


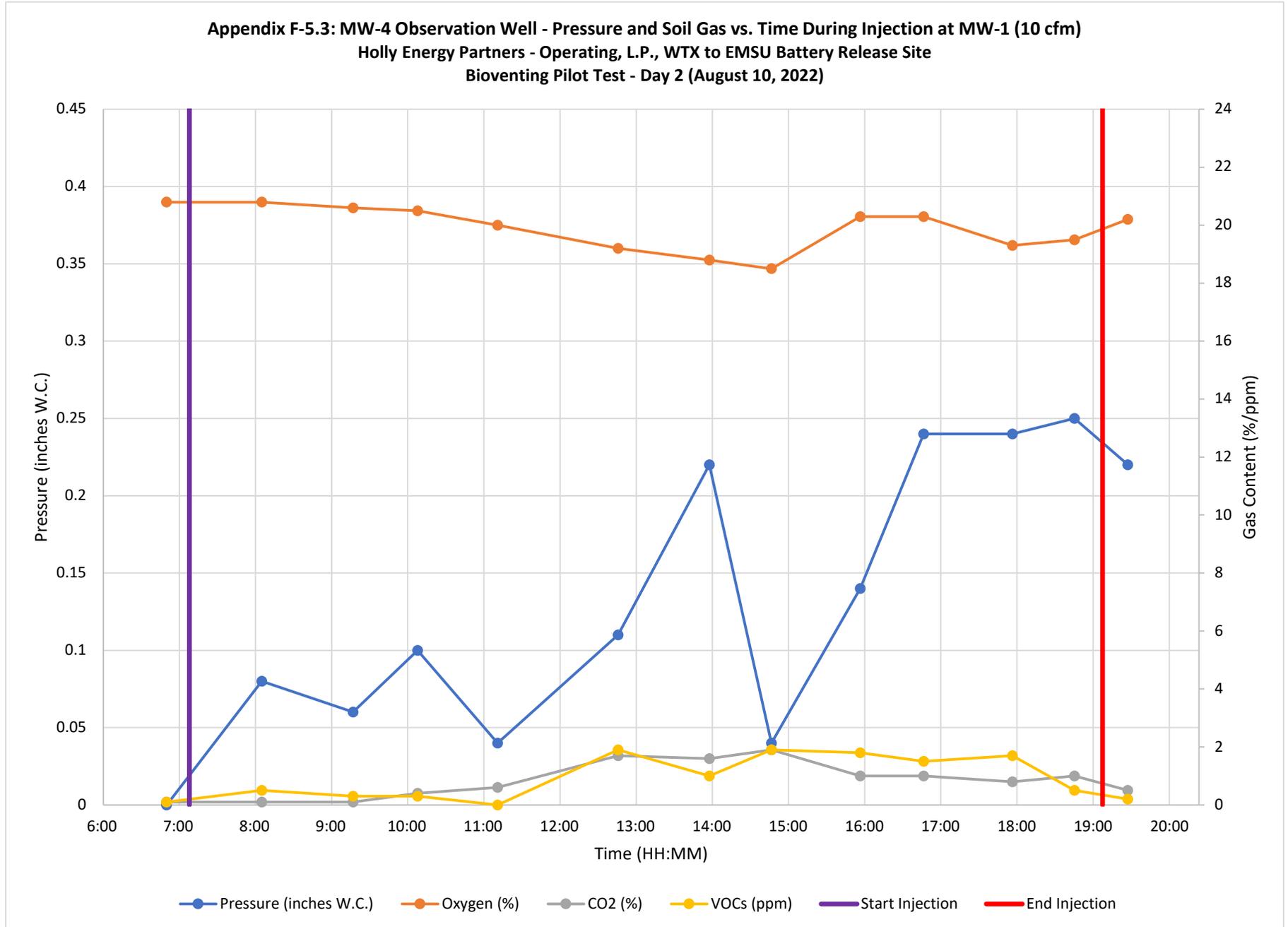


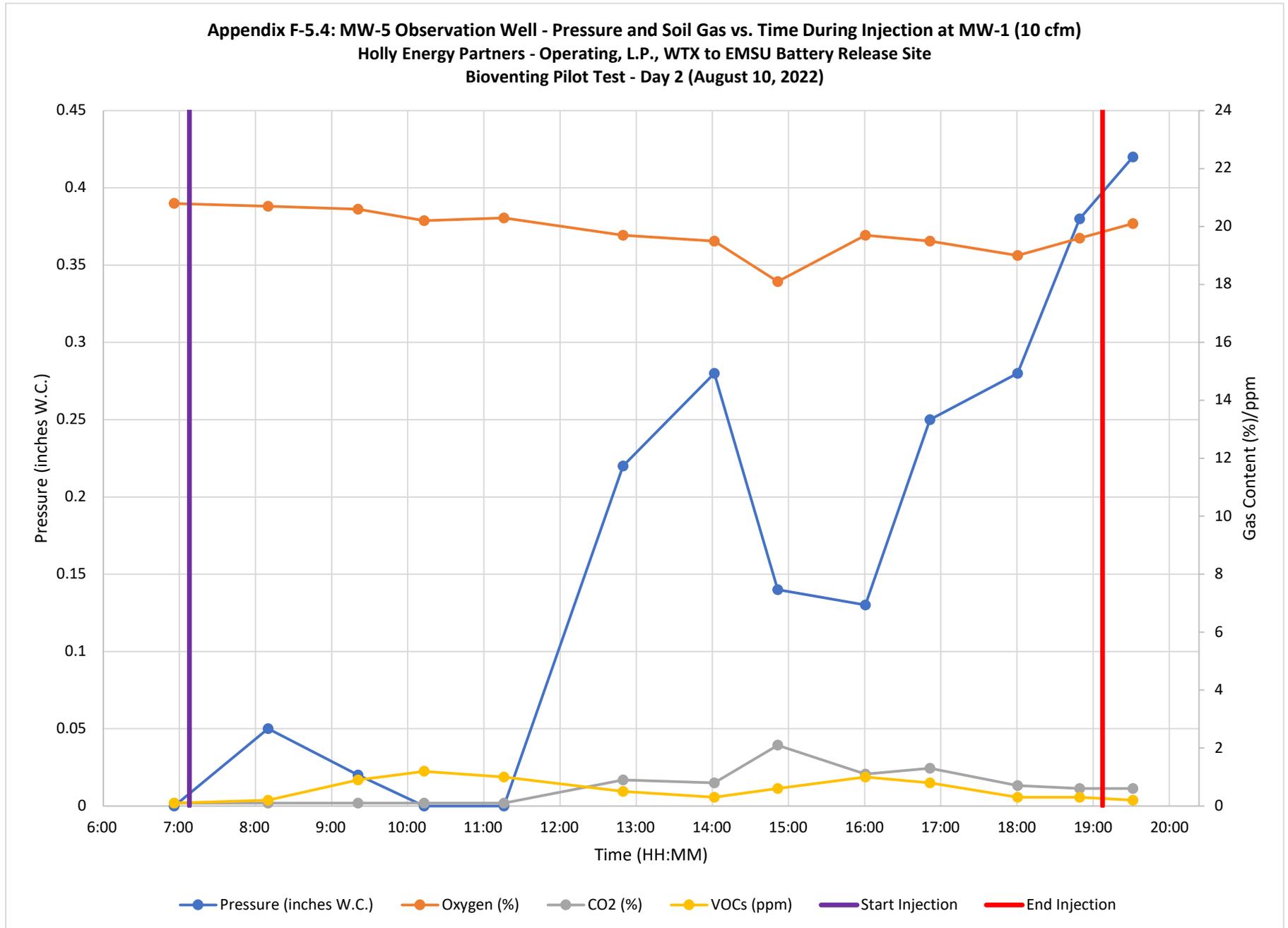


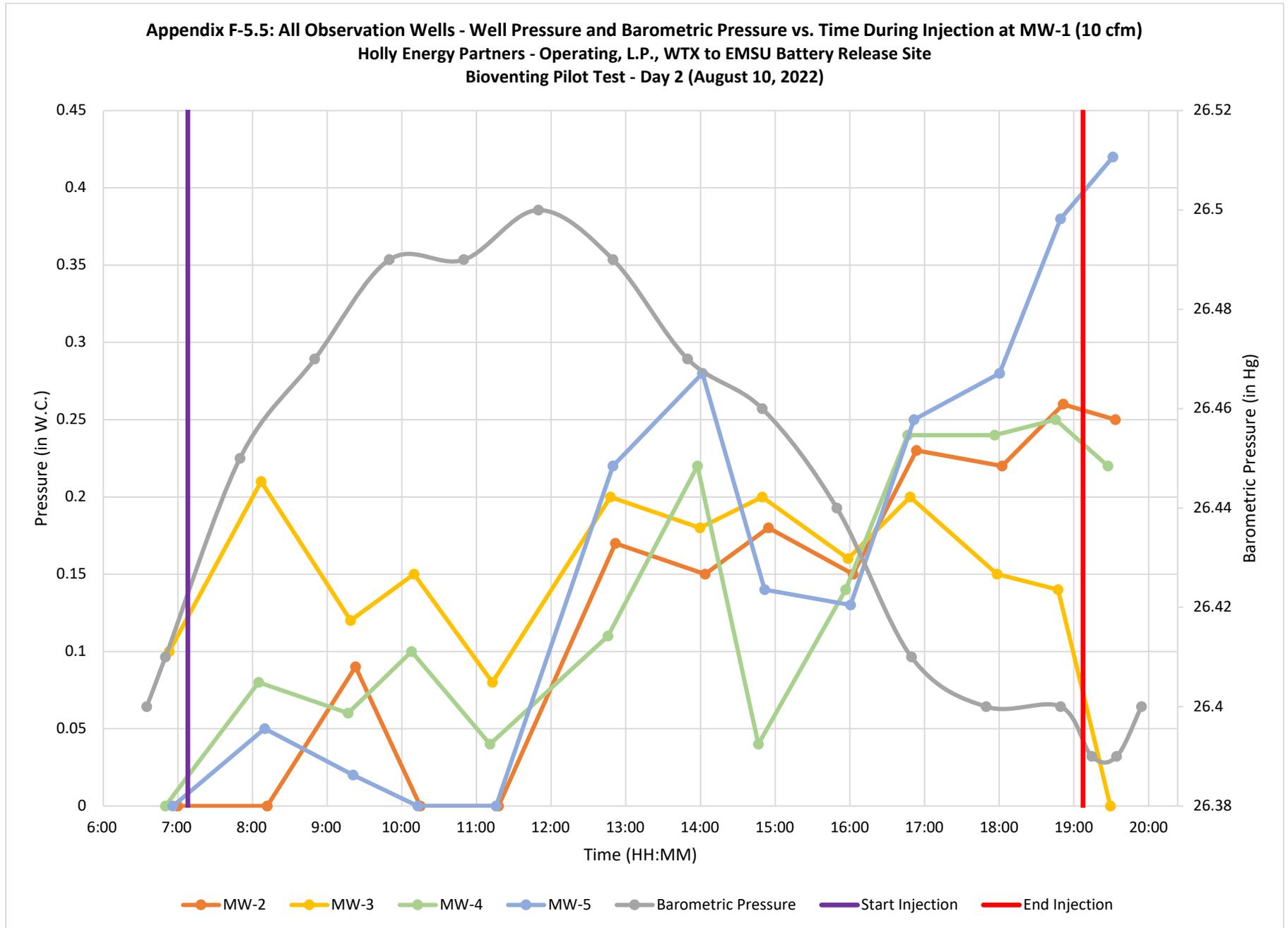
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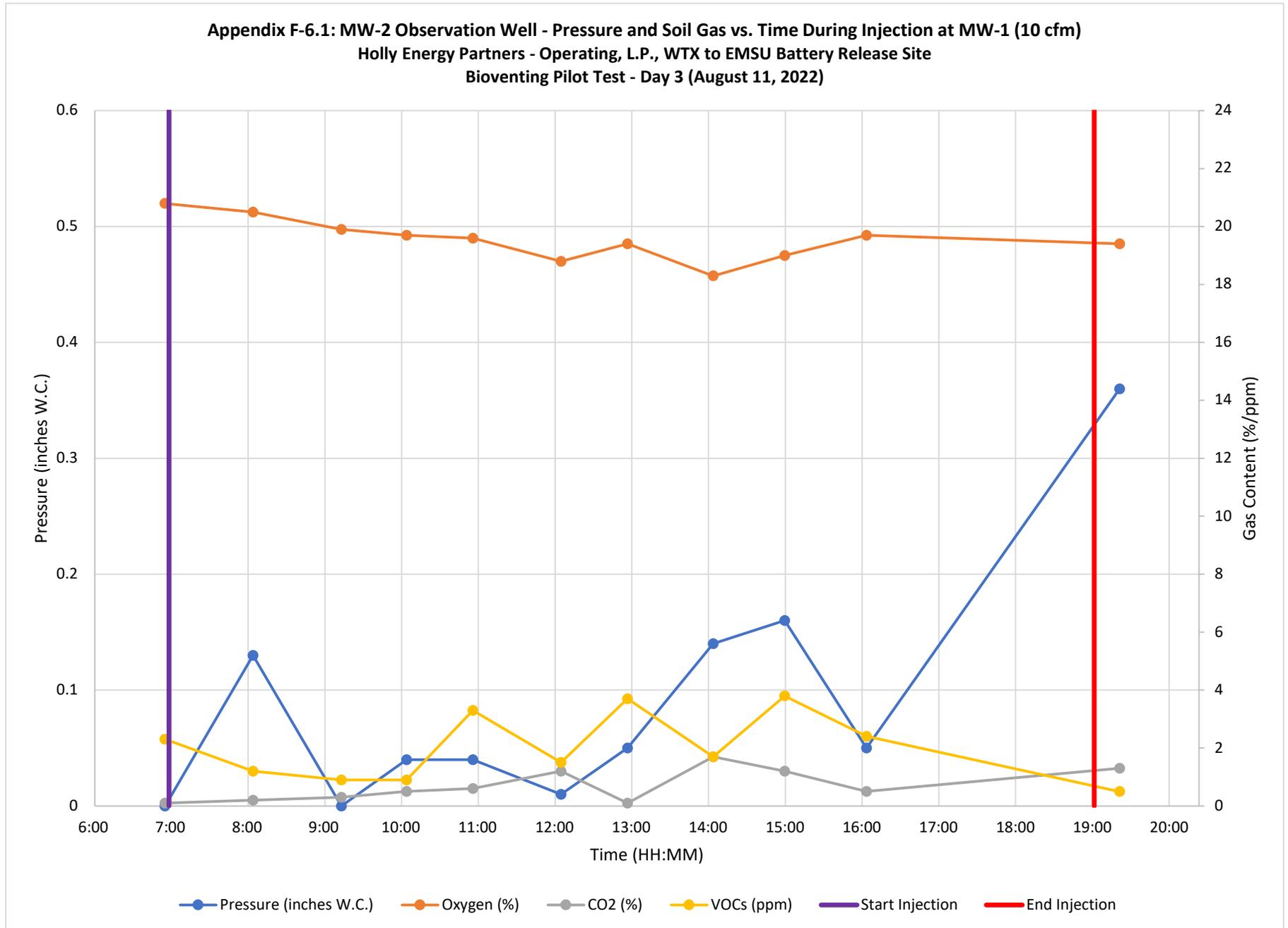


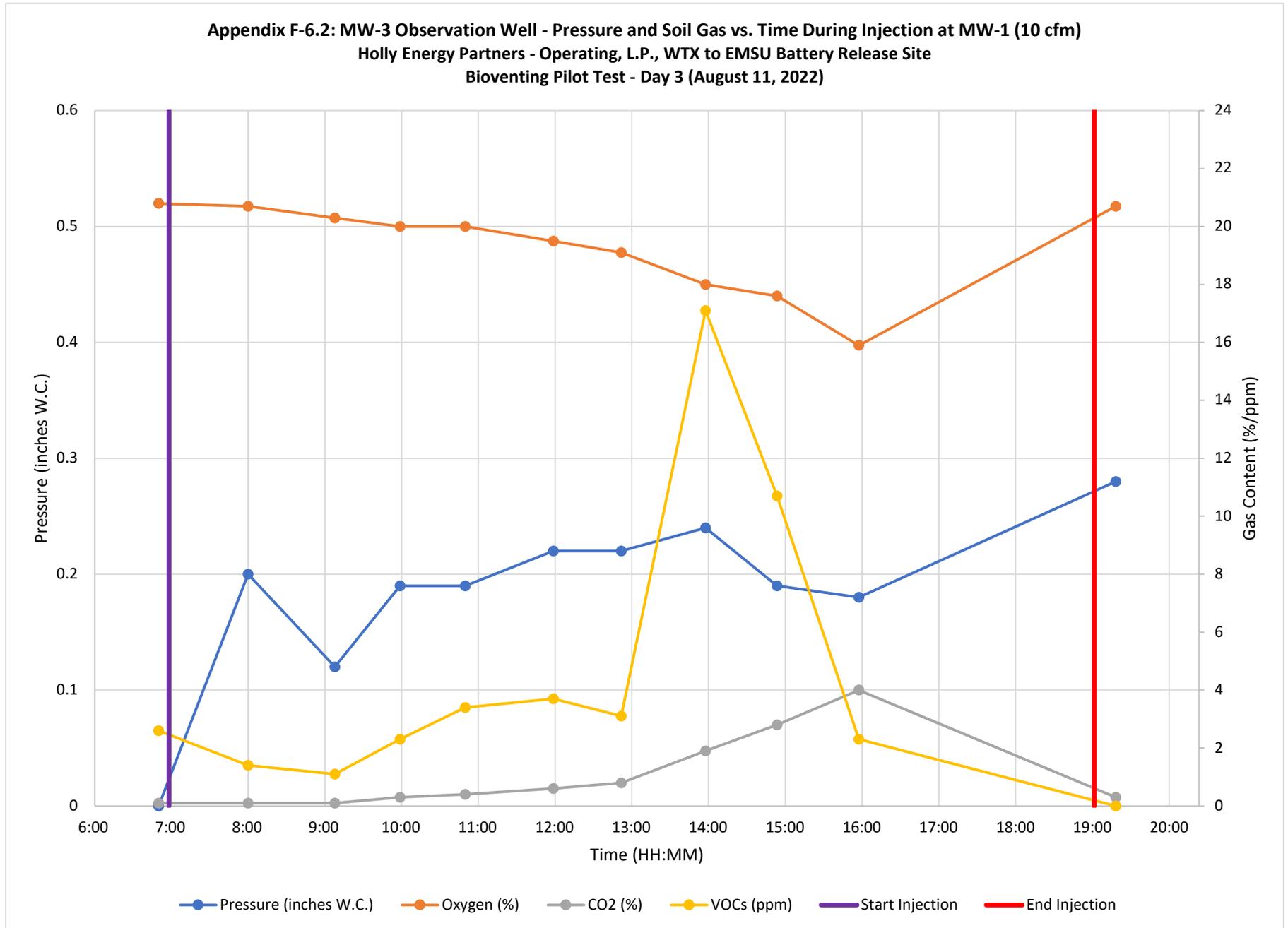


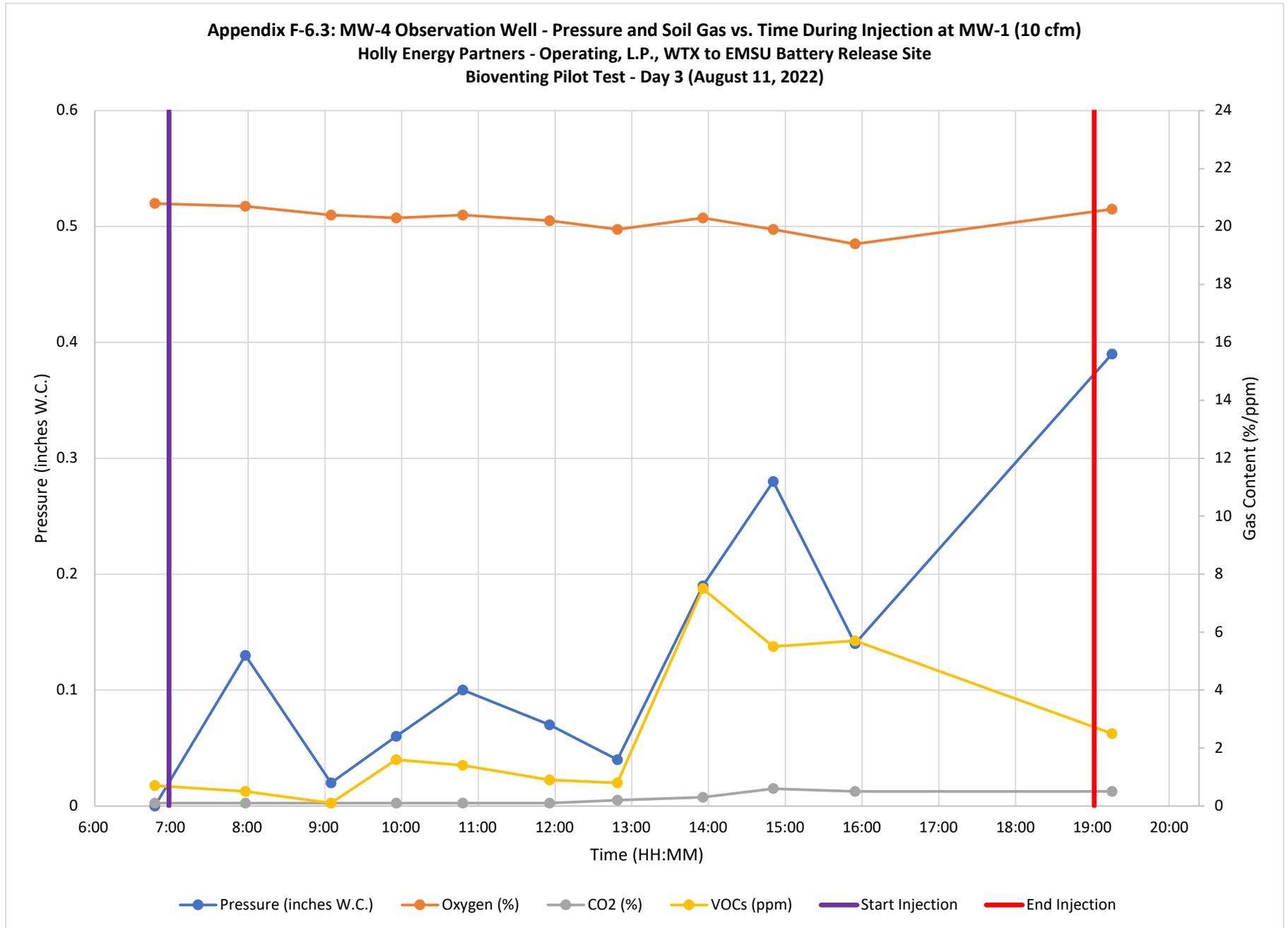


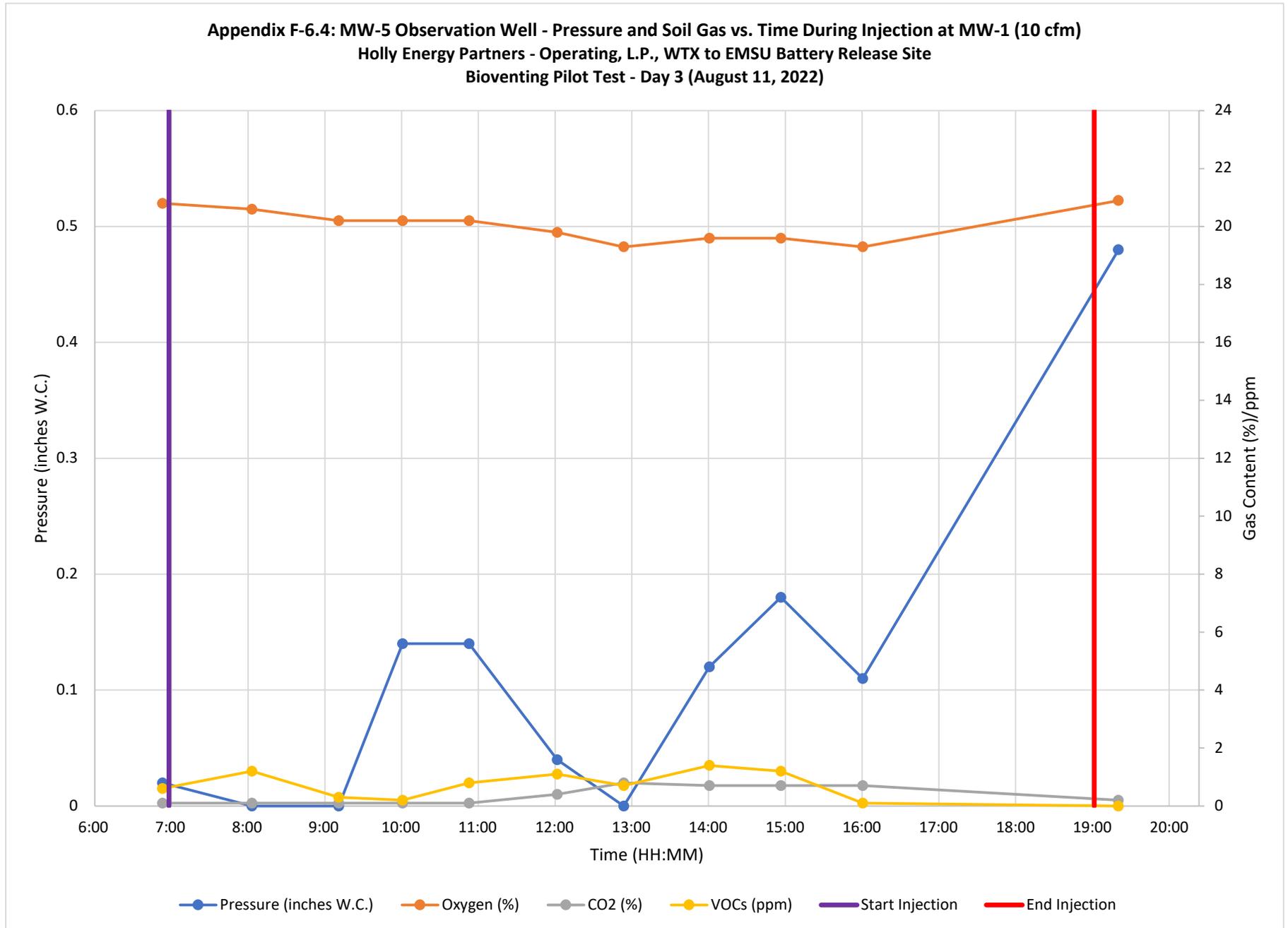


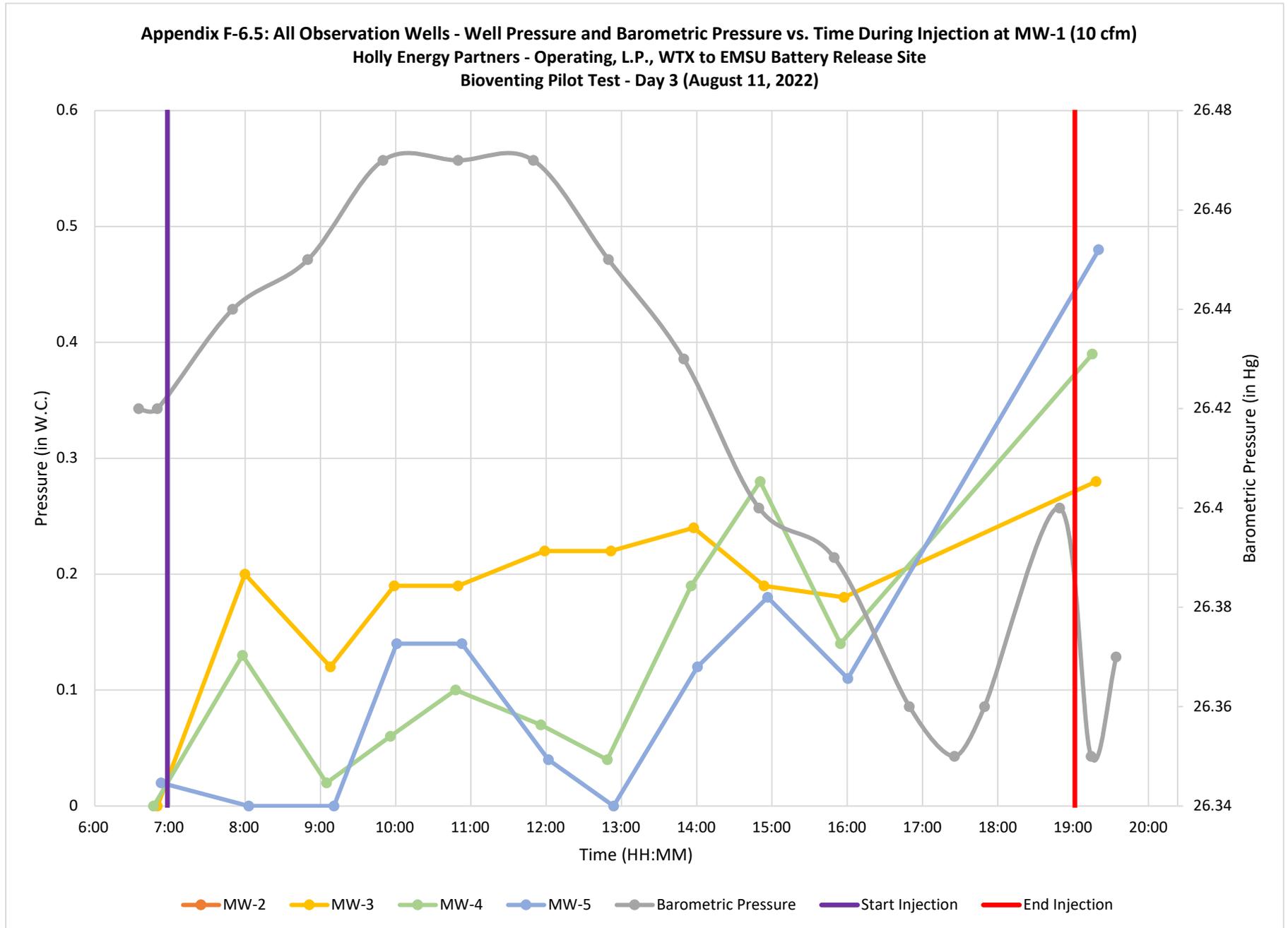
**Day 3 (August 11, 2022)**



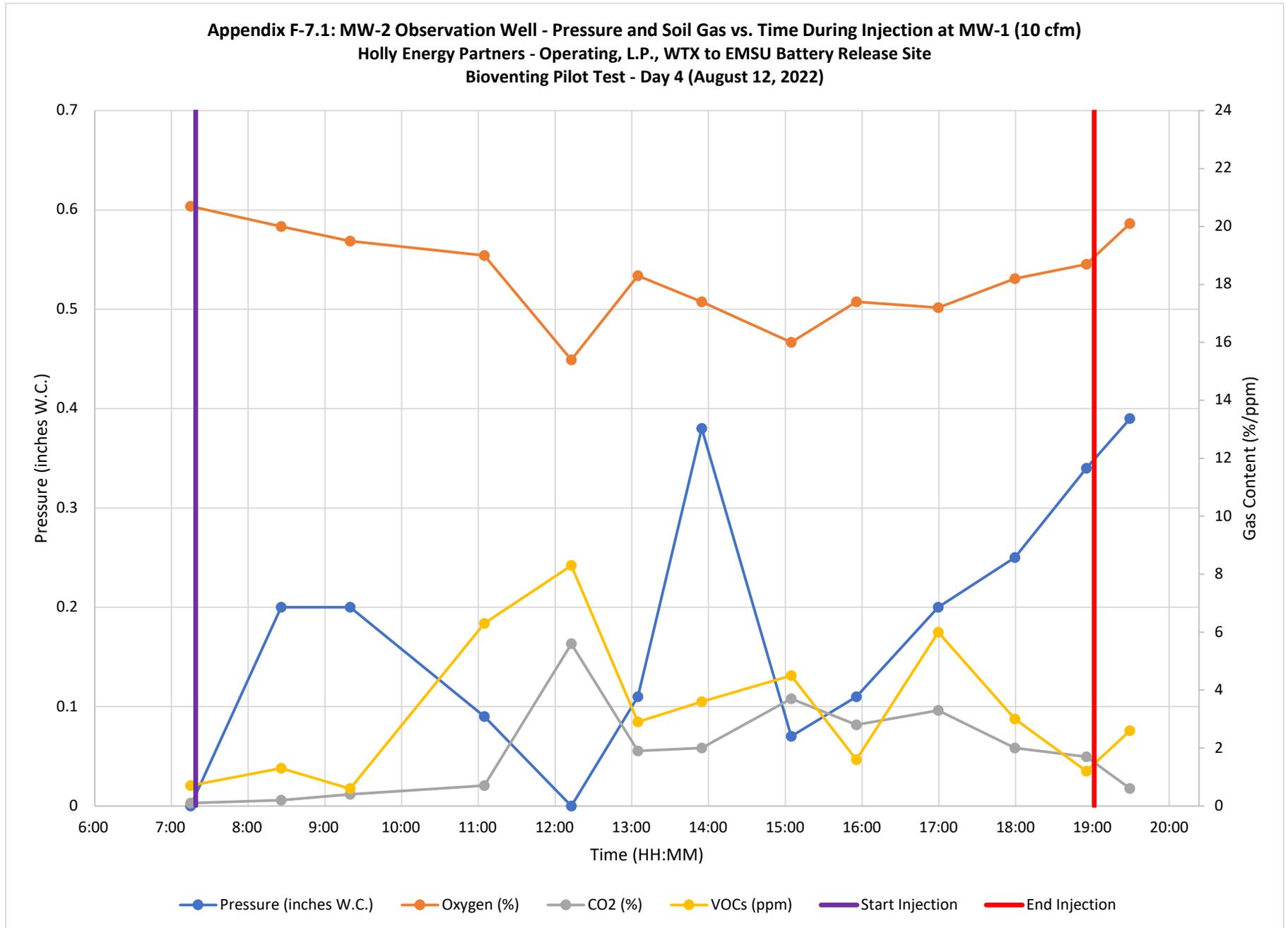


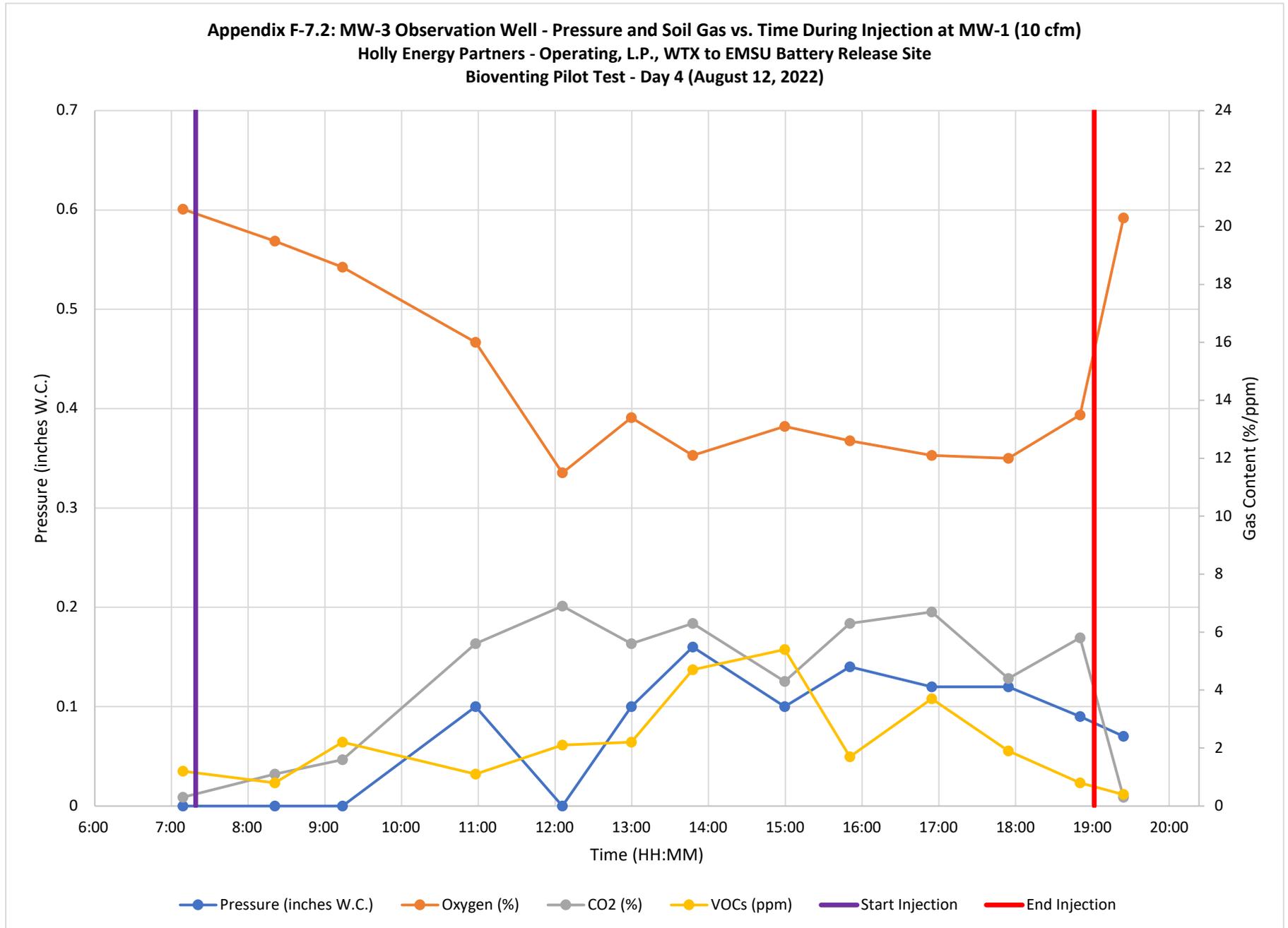


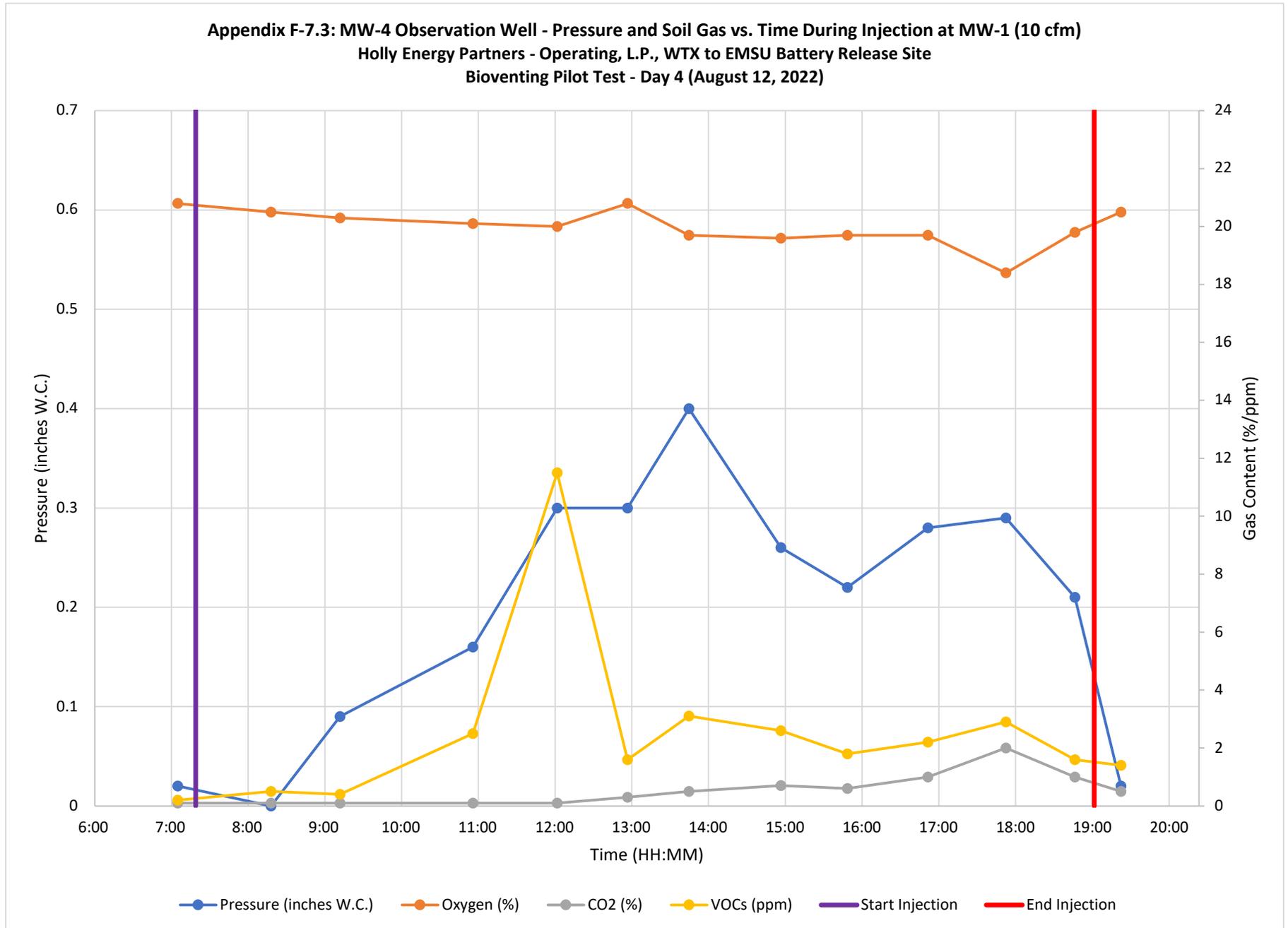


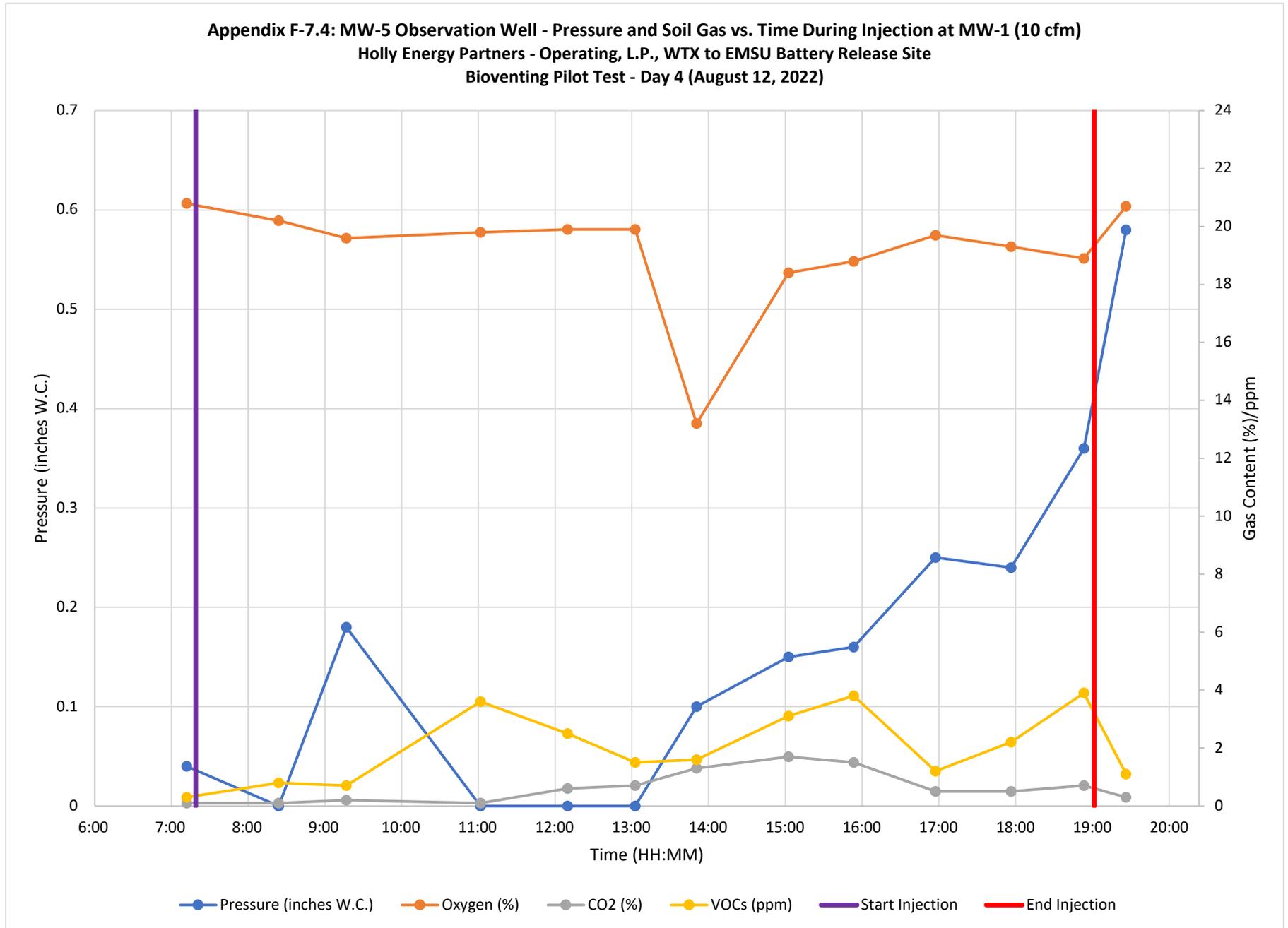


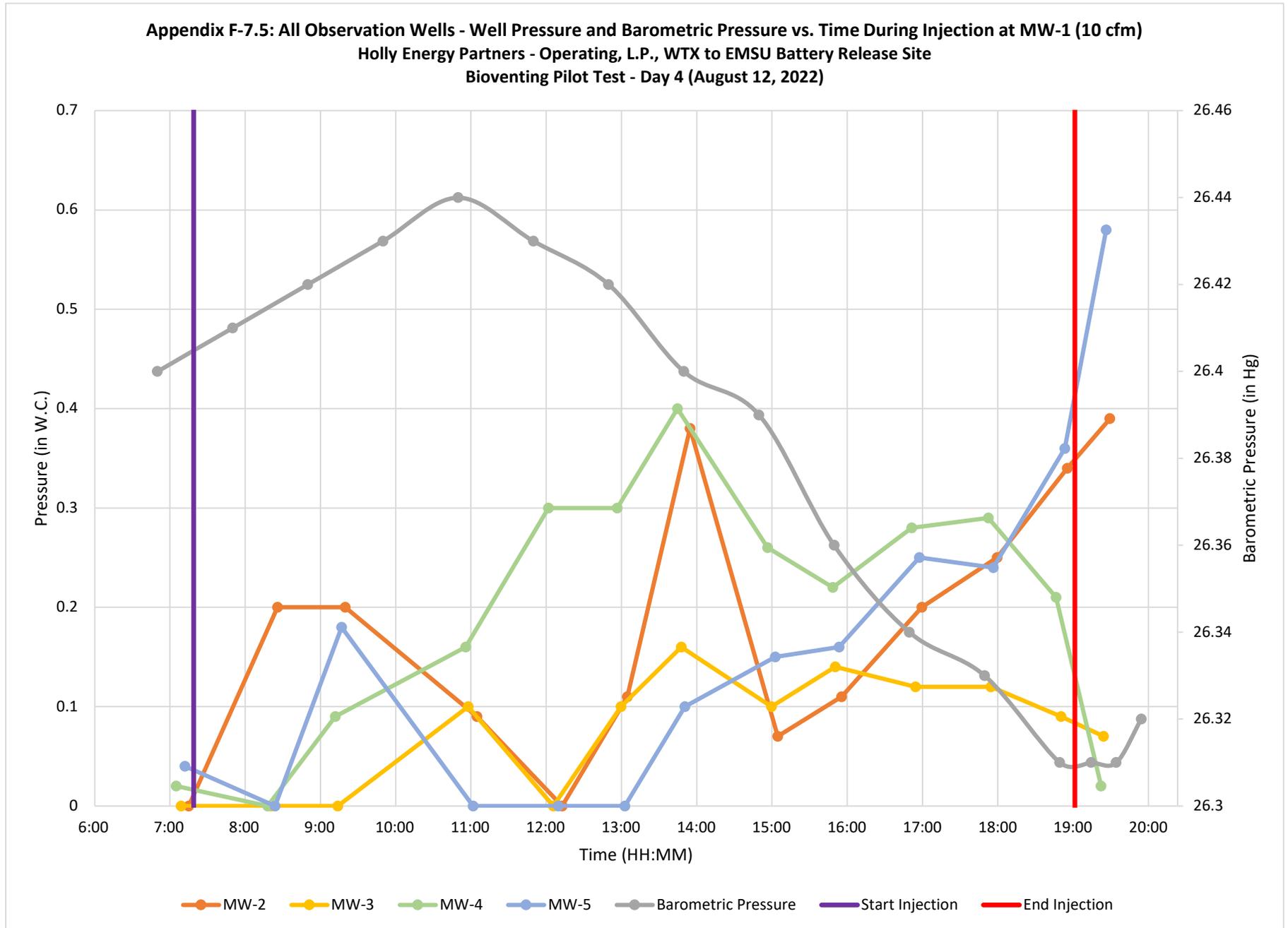
**Day 4 (August 12, 2022)**



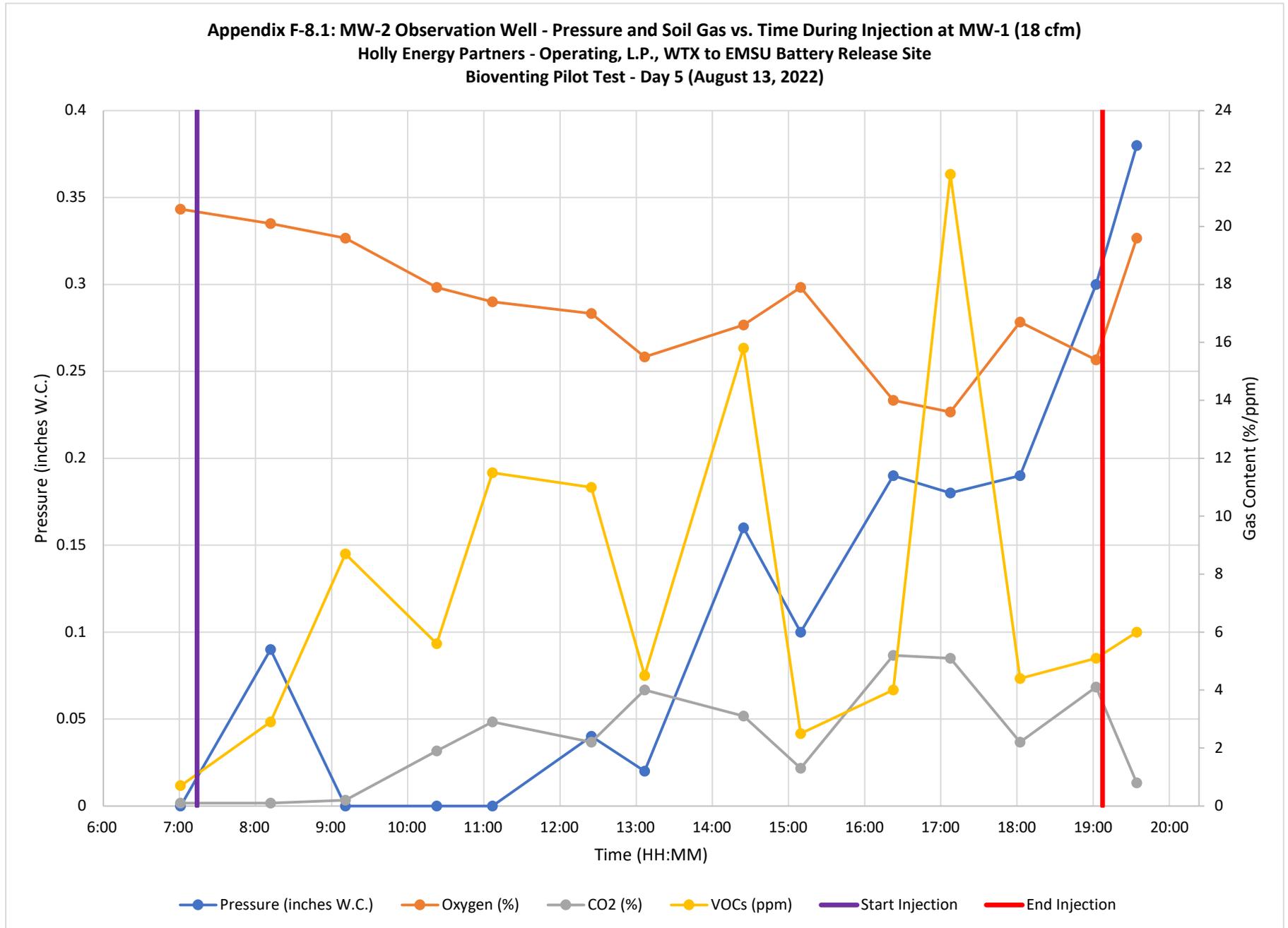


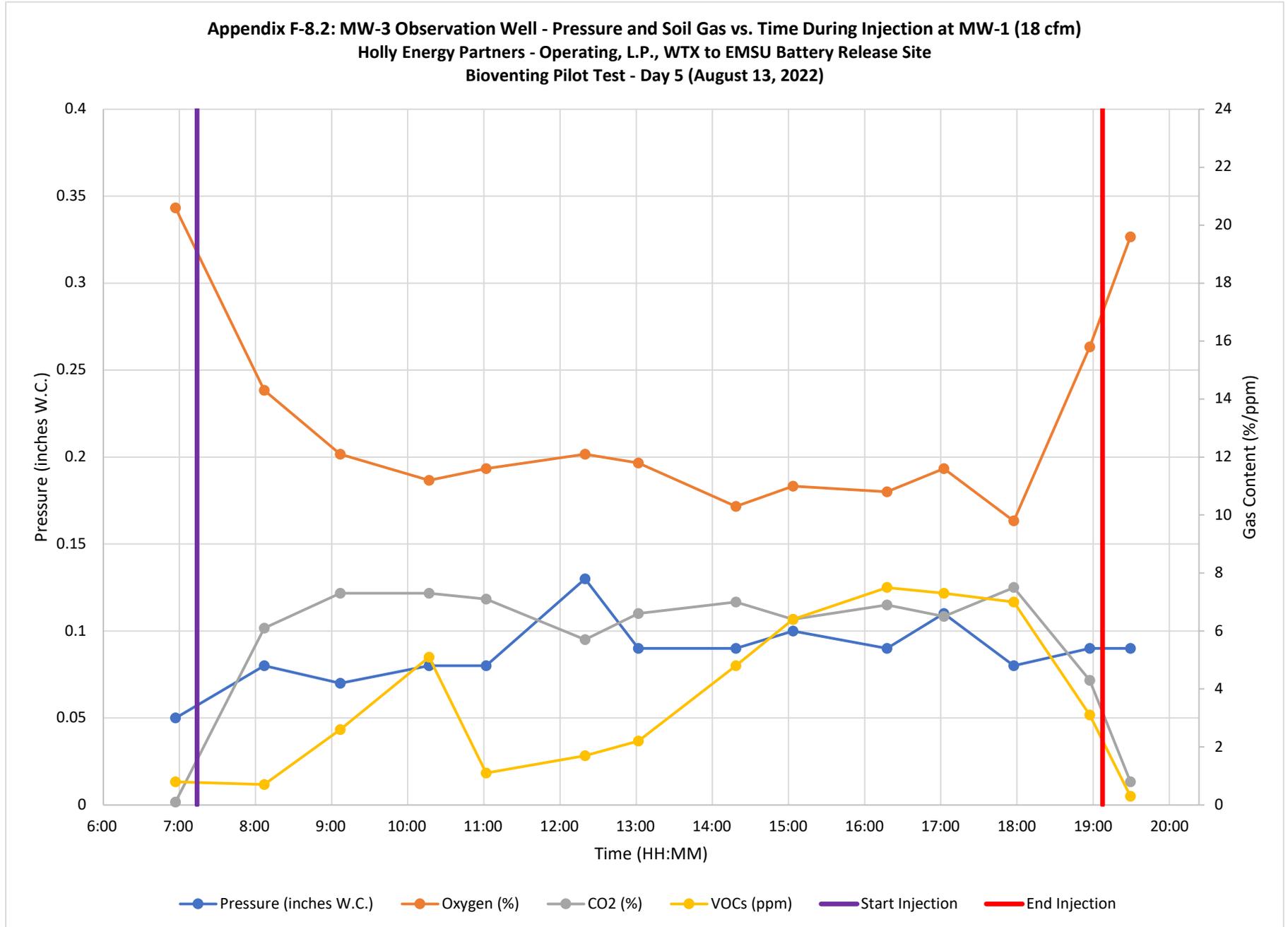


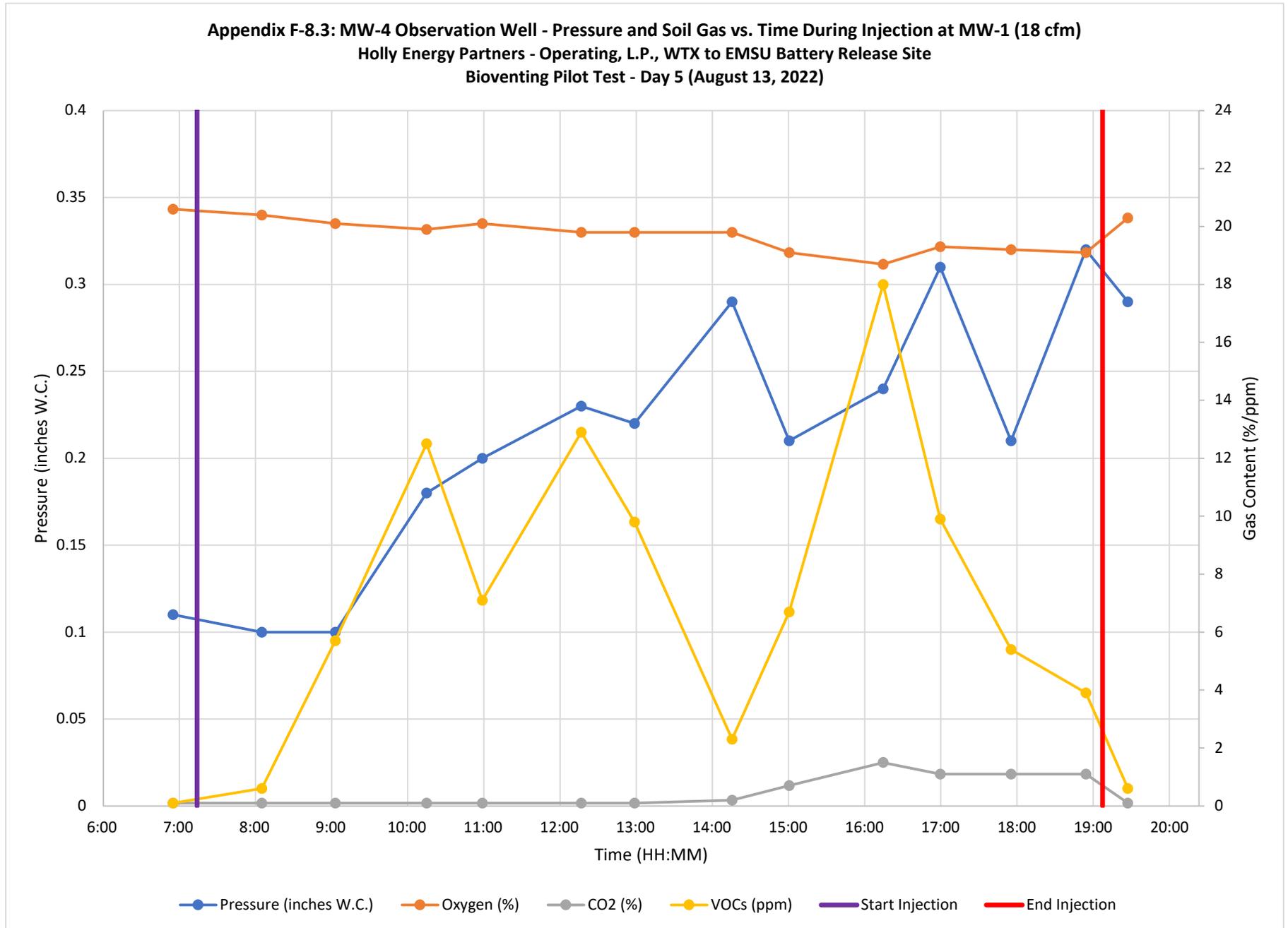


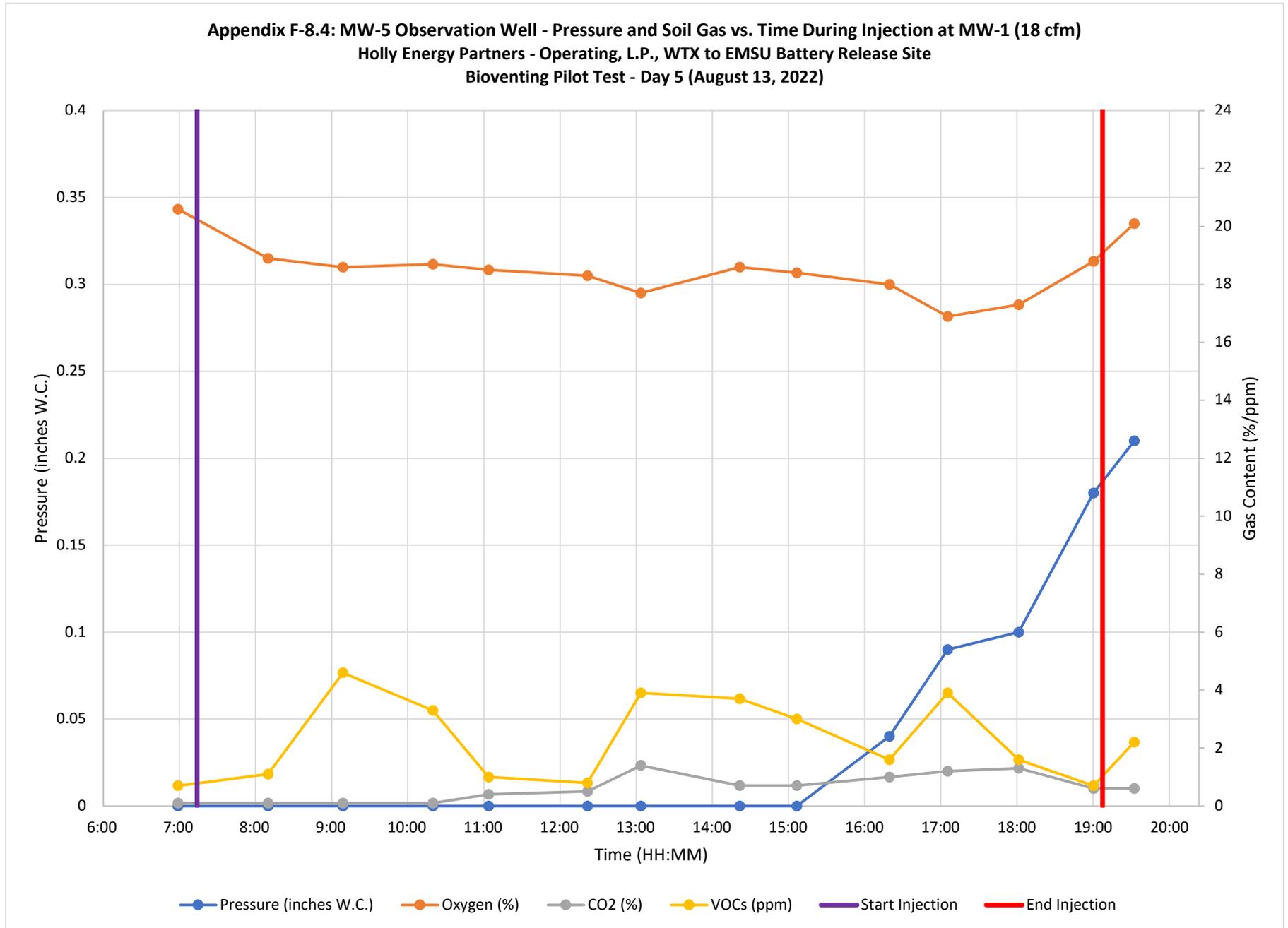


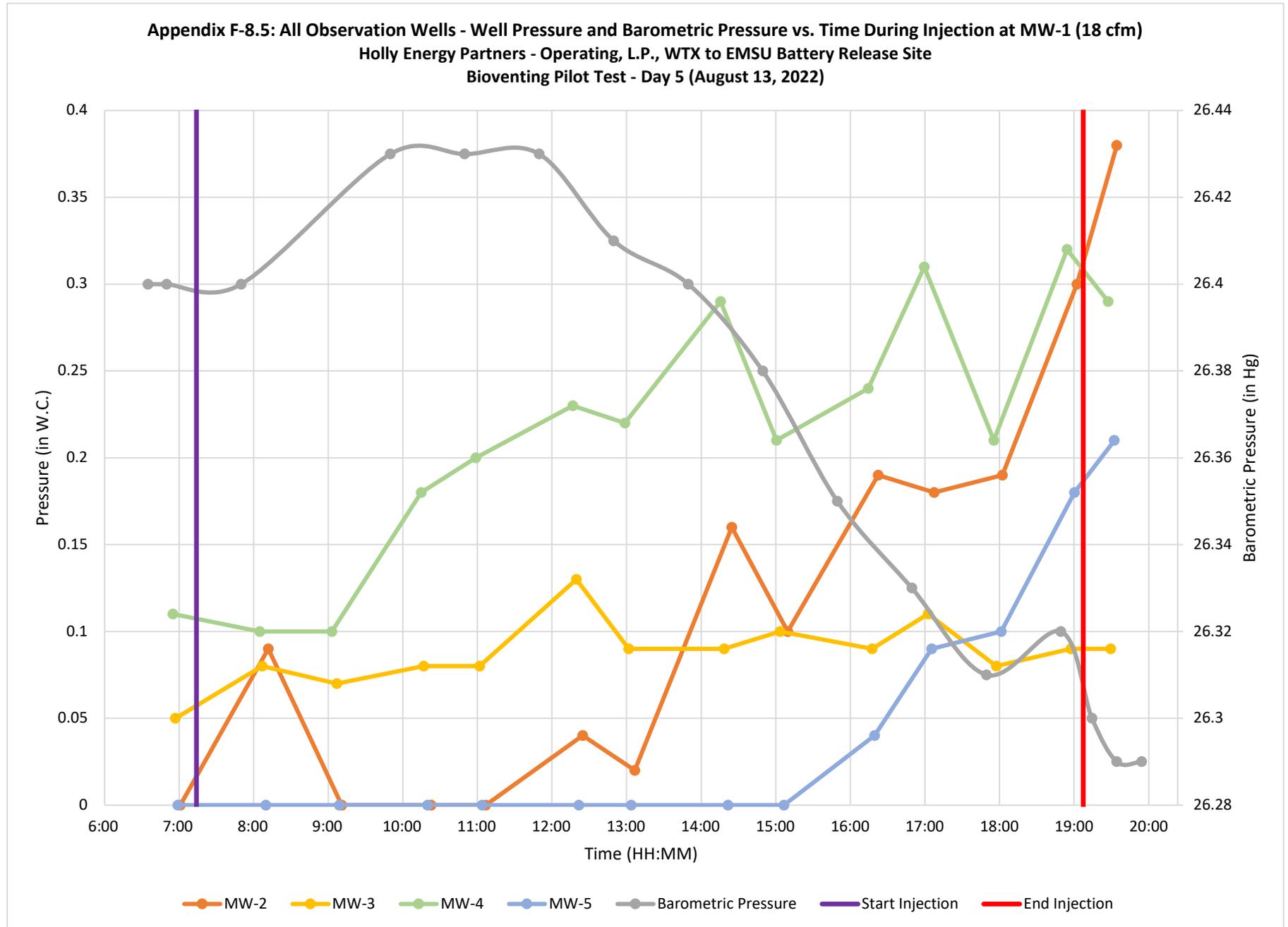
**Day 5 (August 13, 2022)**



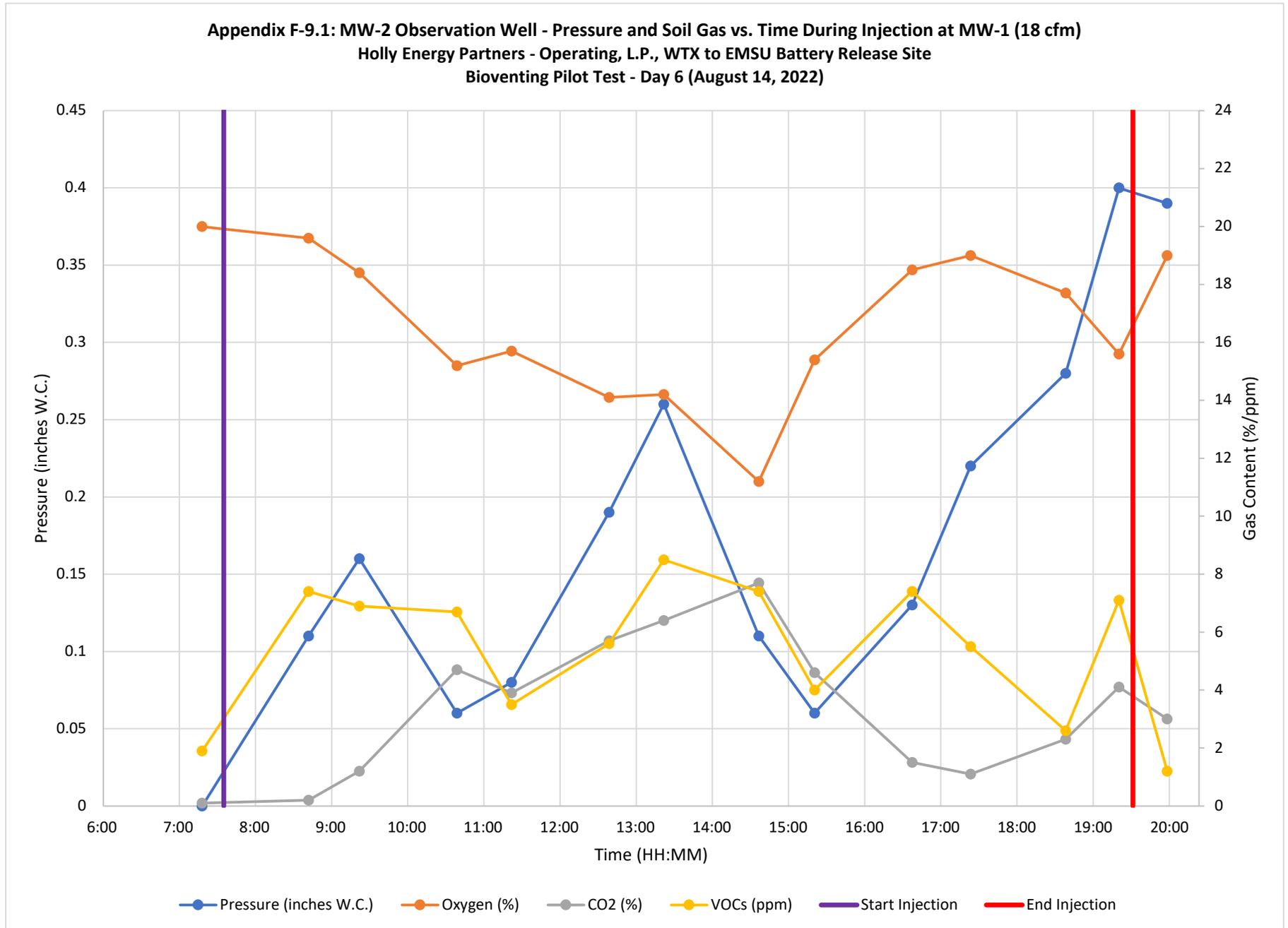


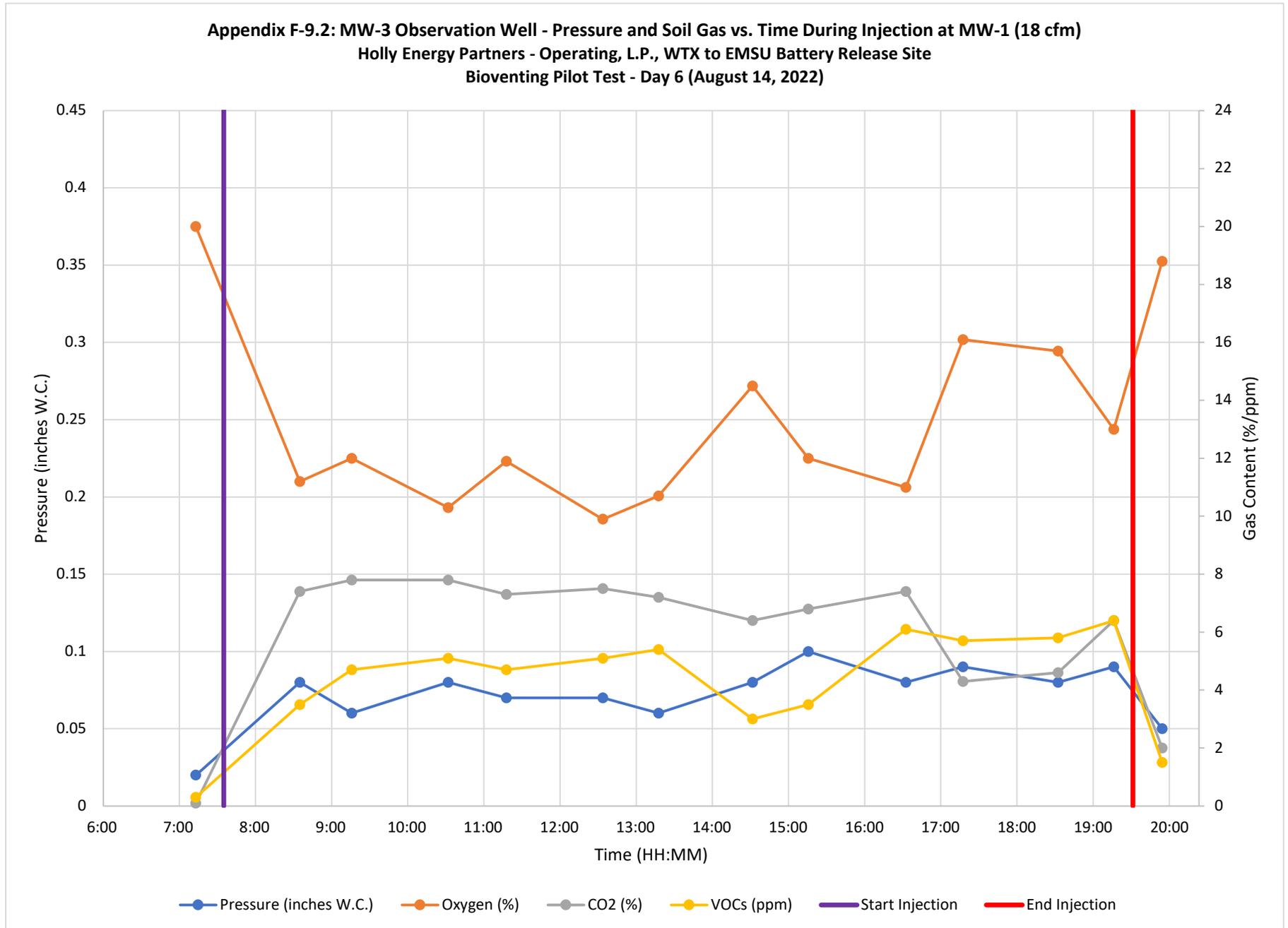


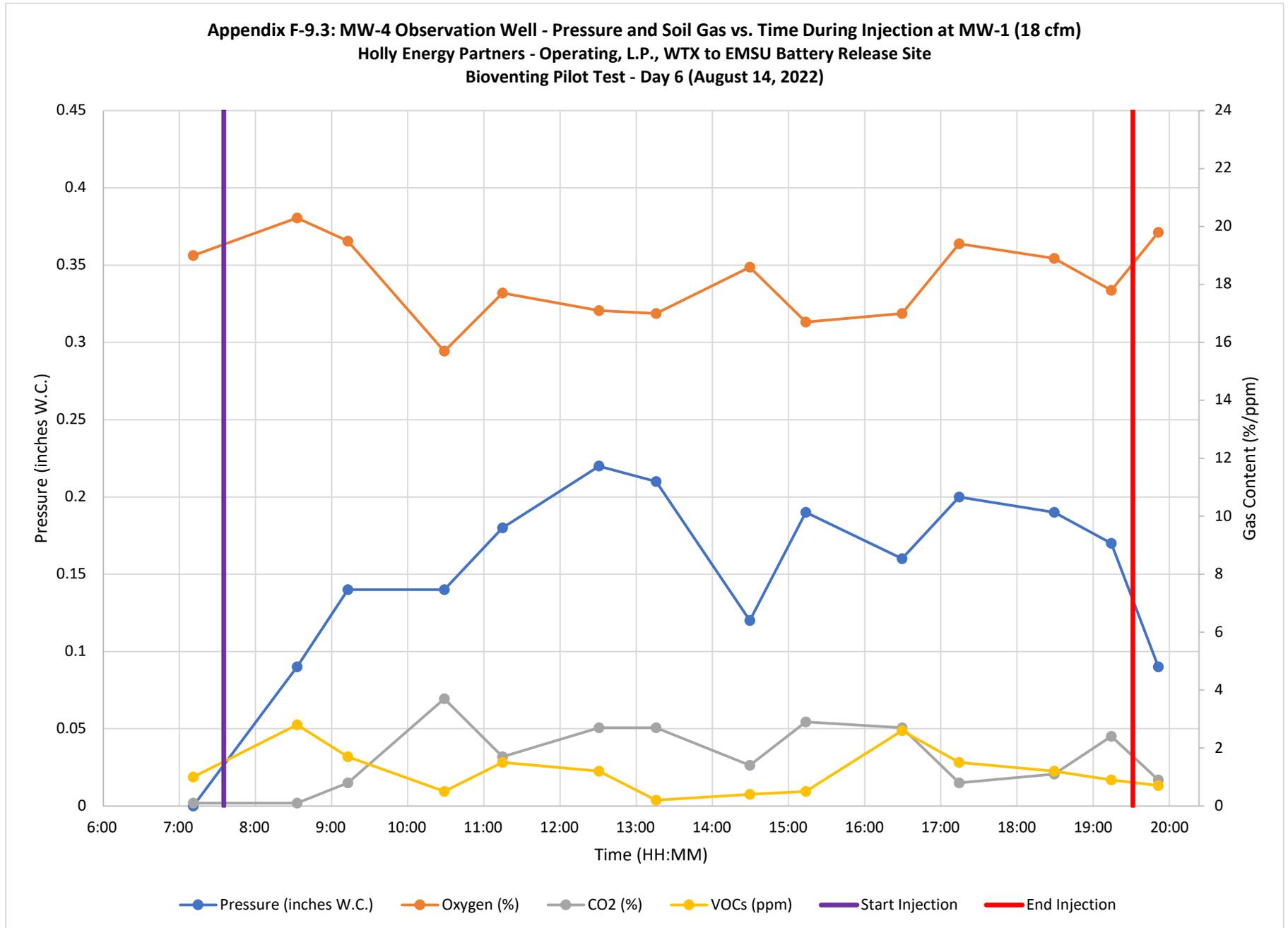


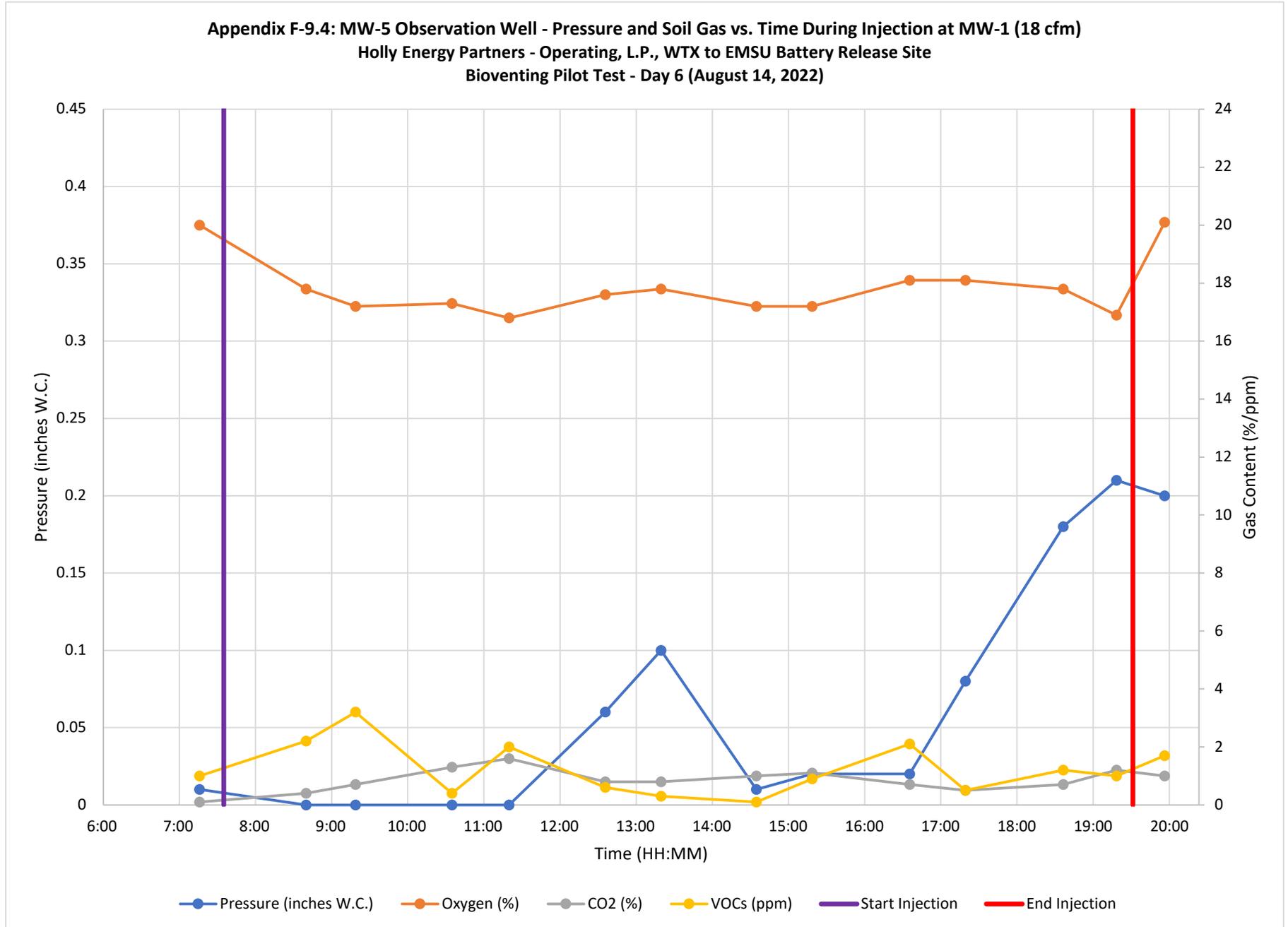


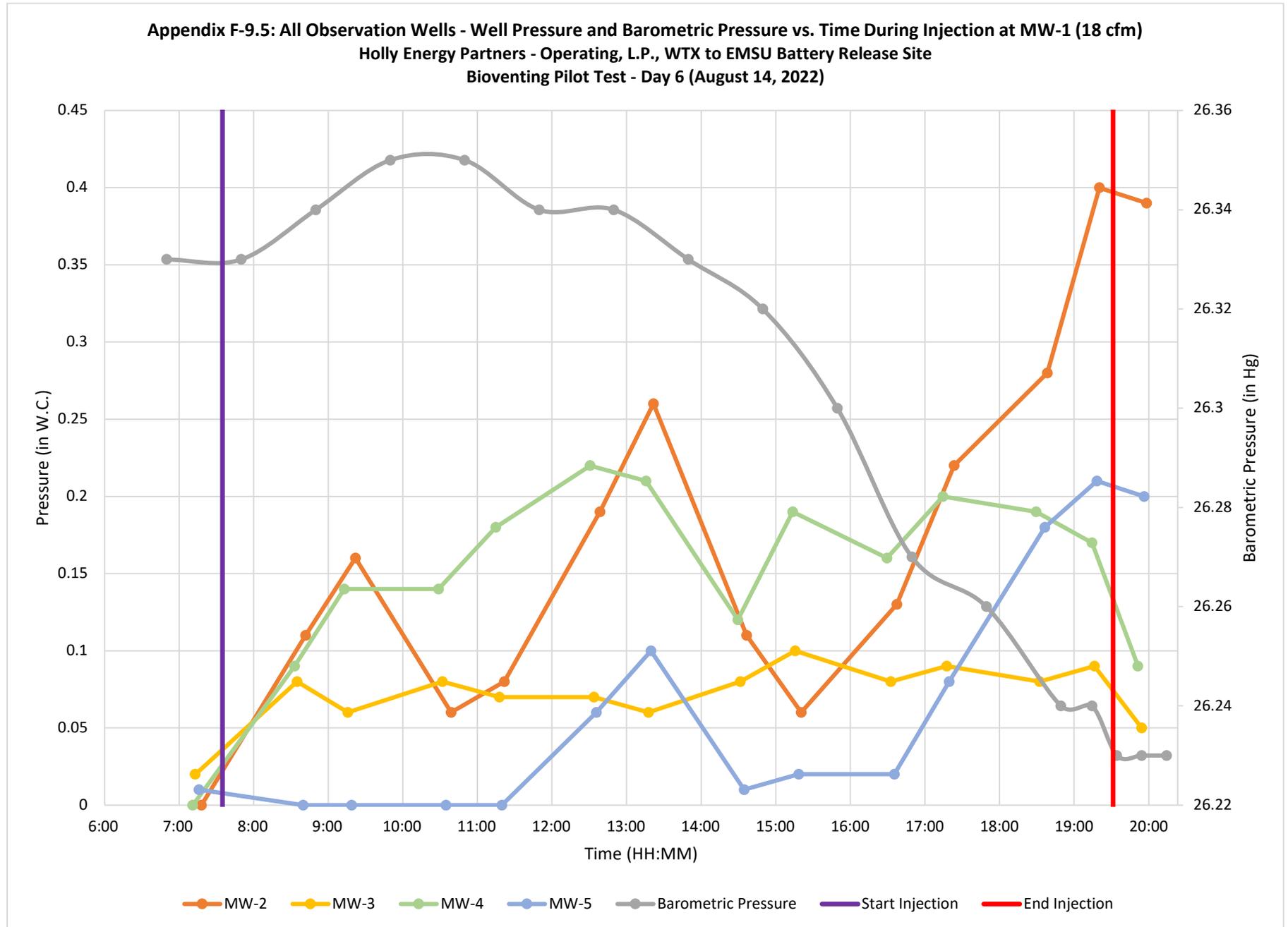
**Day 6 (August 14, 2022)**



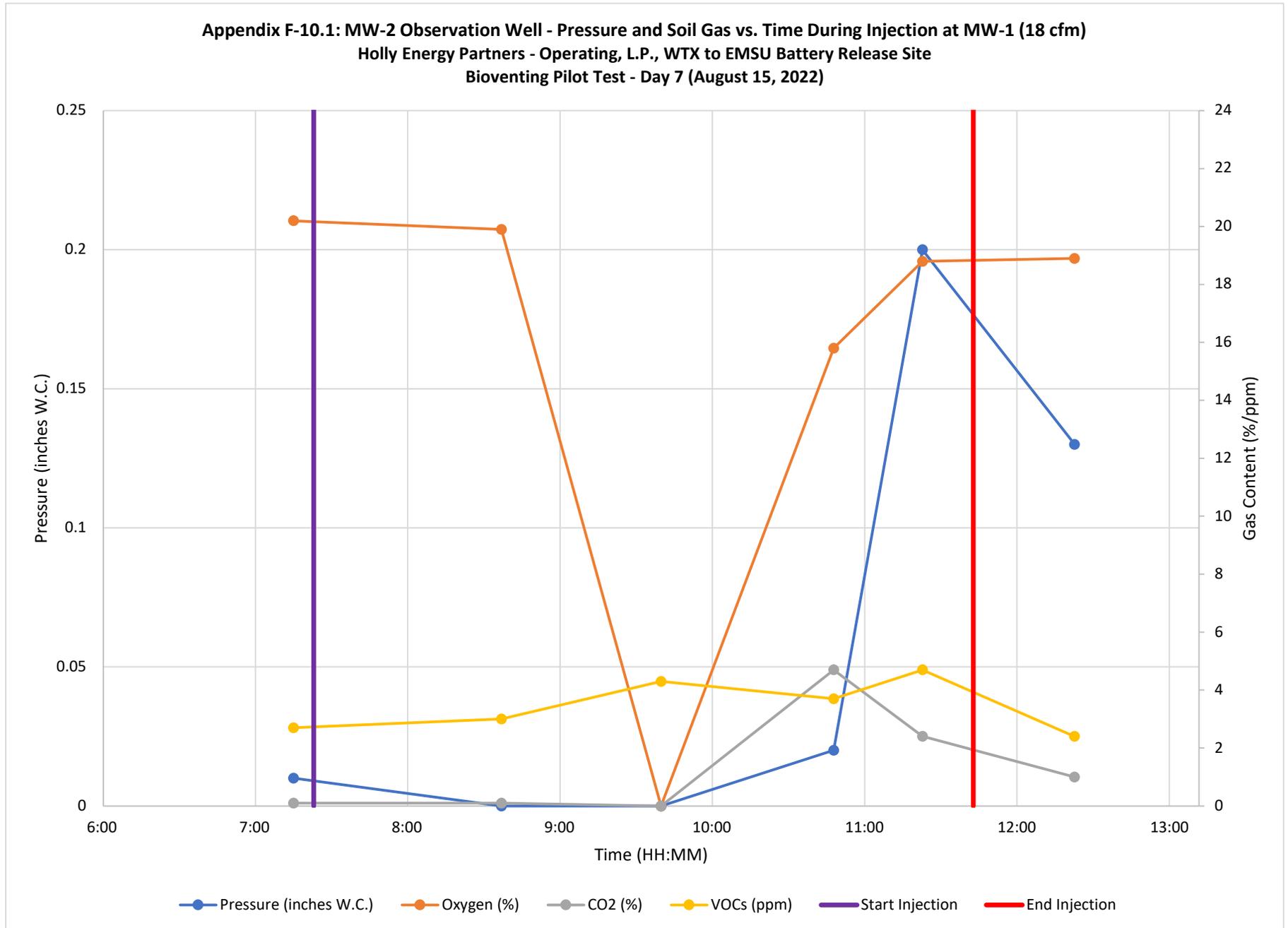


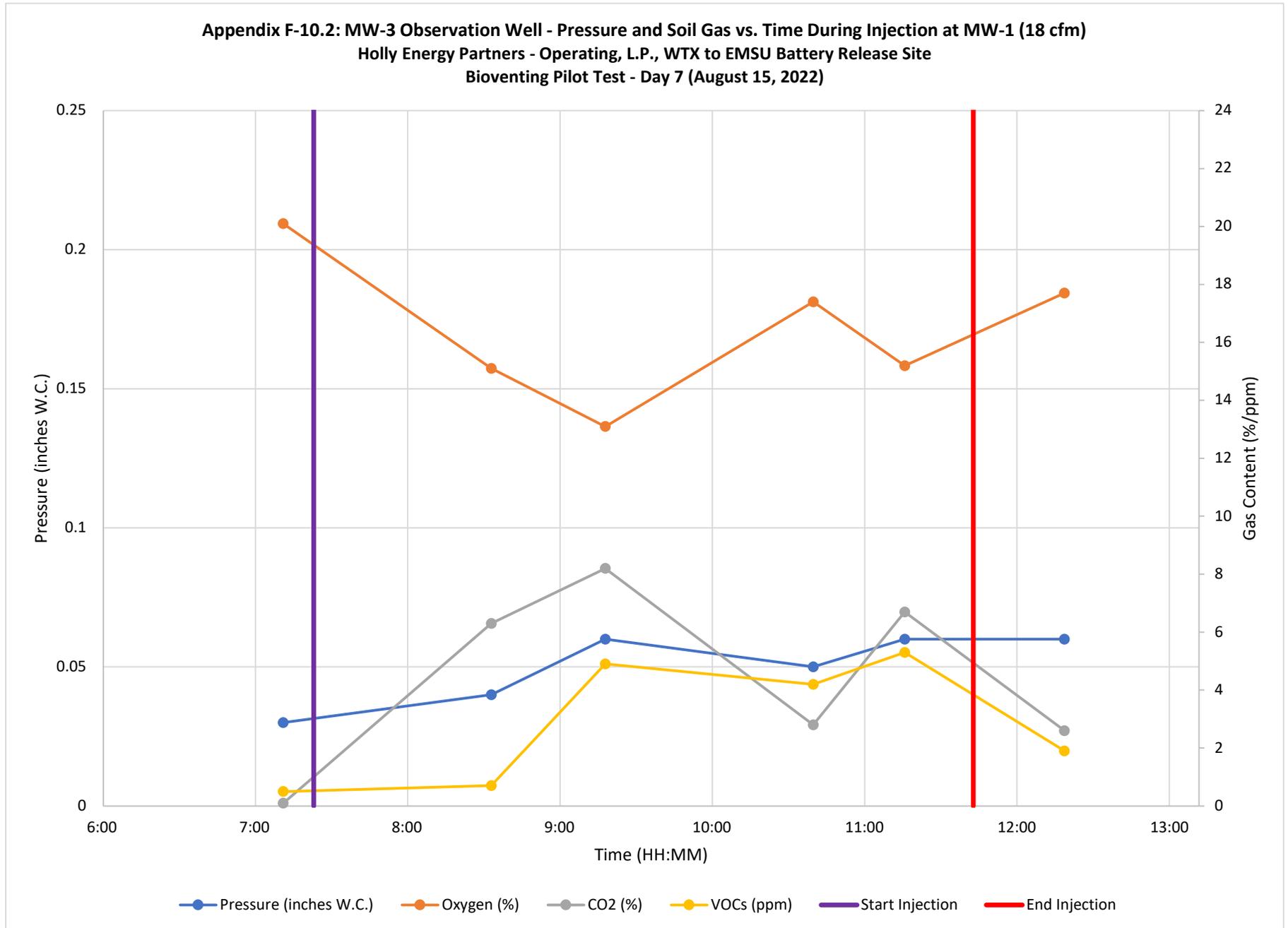


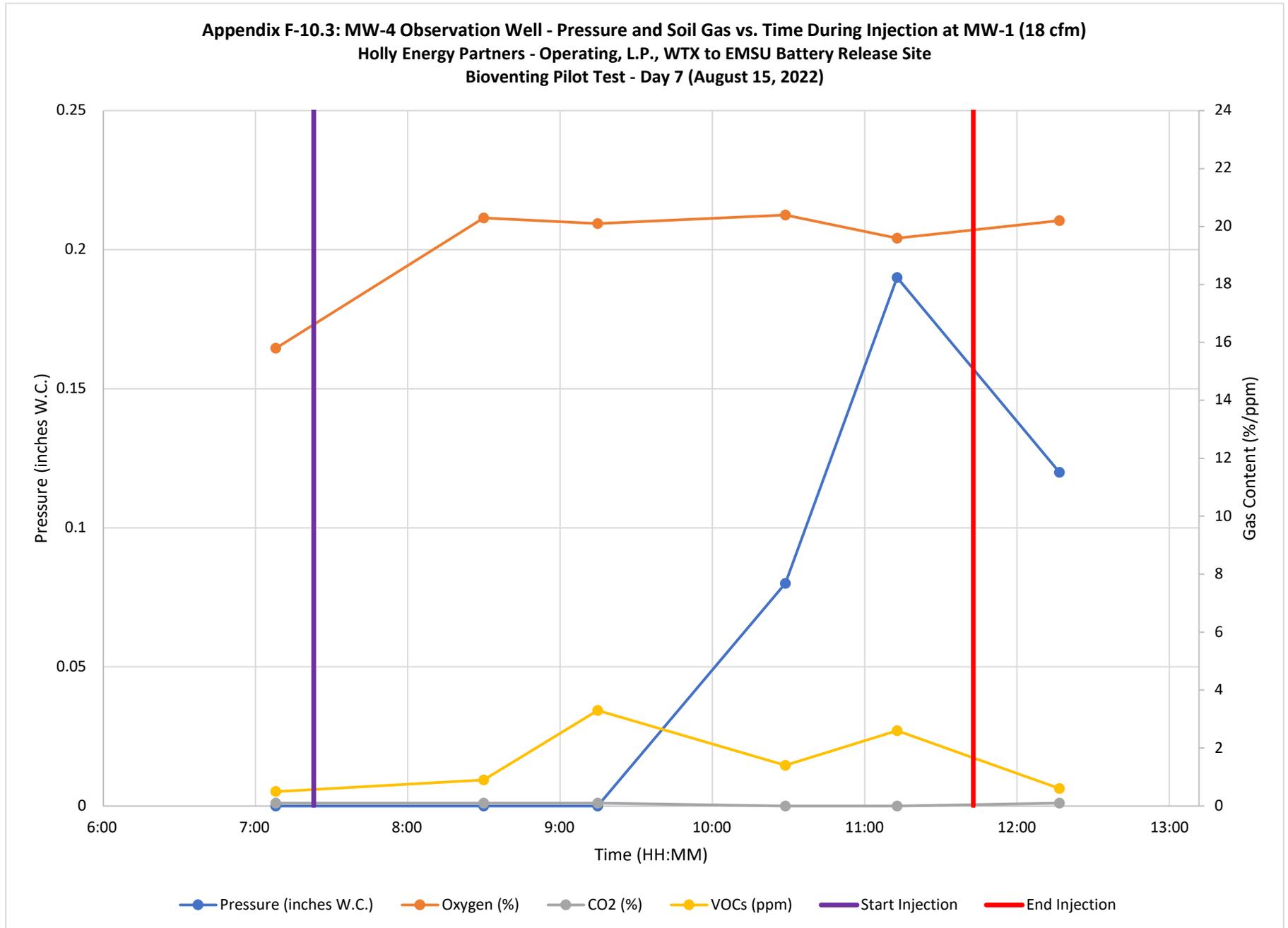


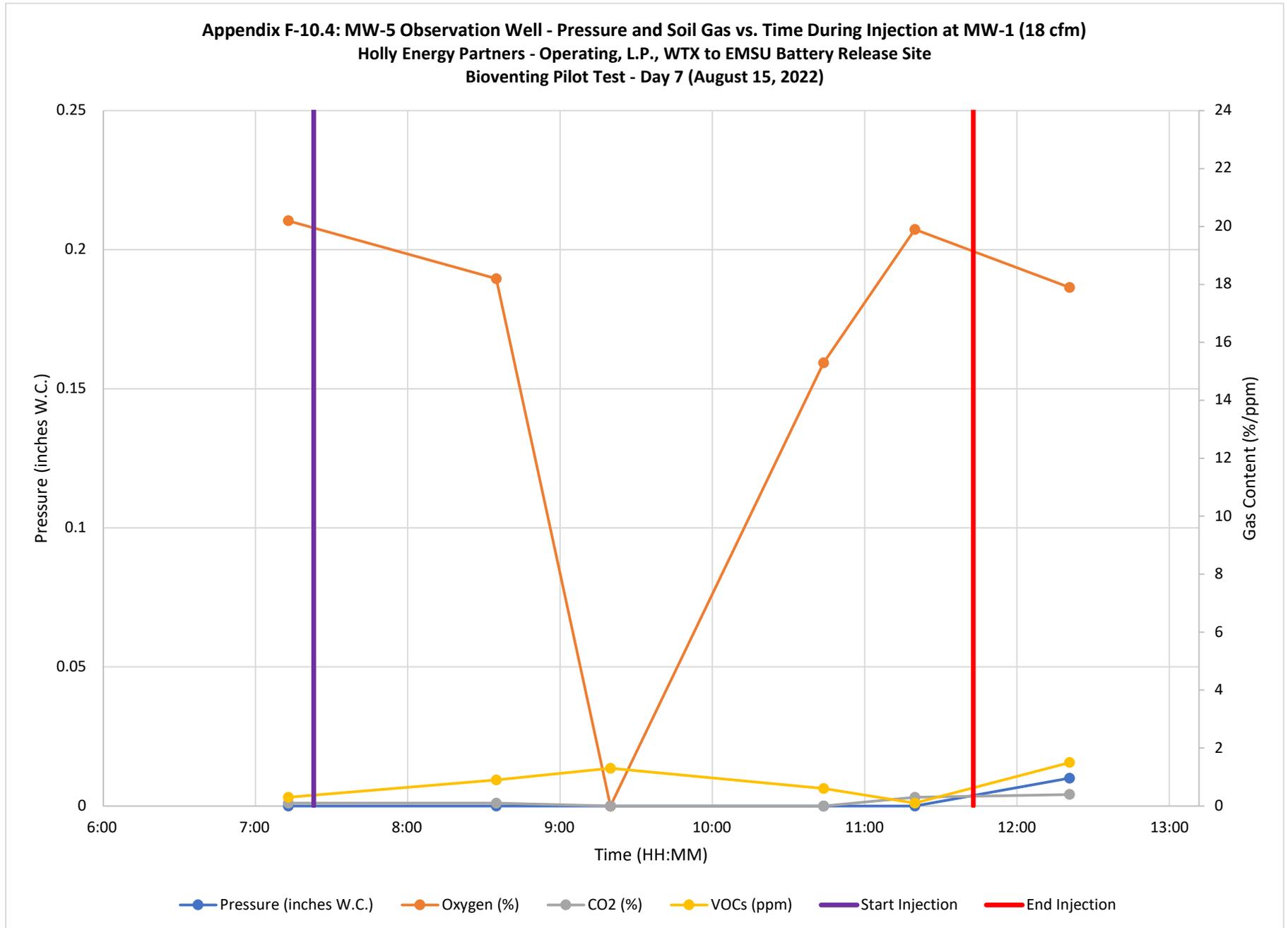


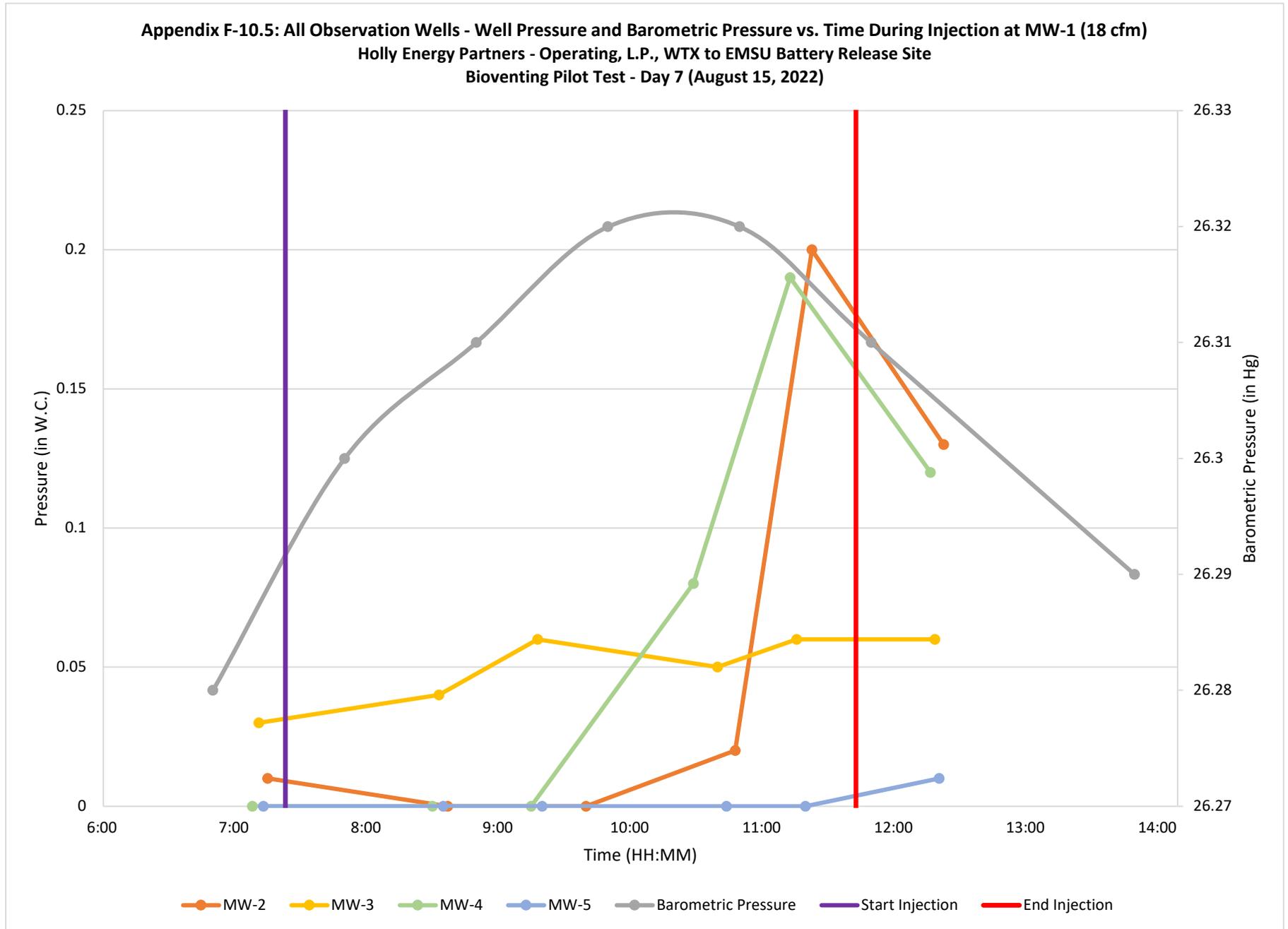
**Day 7 (August 15, 2022)**











**APPENDIX G**  
**UPDATED FORM C-141**

Form C-141

State of New Mexico  
Oil Conservation Division

Page 5

Incident ID	
District RP	
Facility ID	
Application ID	

### Remediation Plan

**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- Detailed description of proposed remediation technique
- Scaled sitemap with GPS coordinates showing delineation points
- Estimated volume of material to be remediated
- Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- Extents of contamination must be fully delineated.
- Contamination does not cause an imminent risk to human health, the environment, or groundwater.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Melanie Nolan Title: Environmental Specialist, Holly Energy Partners  
 Signature: Melanie Nolan Date: 10/12/22  
 email: Melanie.Nolan@hollvenergy.com Telephone: 575-748-8972

**OCD Only**

Received by: \_\_\_\_\_ Date: \_\_\_\_\_

- Approved       Approved with Attached Conditions of Approval       Denied       Deferral Approved

Signature: Jennifer Nobui Date: 11/28/2022

**APPENDIX H**

**FORM C-108 APPLICATION FOR AUTHORIZATION TO INJECT**

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL  
RESOURCES DEPARTMENT

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

FORM C-108  
Revised June 10, 2003

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: \_\_\_\_\_ Secondary Recovery \_\_\_\_\_ Pressure Maintenance \_\_\_\_\_ Disposal \_\_\_\_\_ Storage  
**Other: Environmental Remediation - Ambient Air Injection for Bioventing Remediation System**  
Application qualifies for administrative approval? \_\_\_\_\_  Yes \_\_\_\_\_ No
- II. OPERATOR: Holly Energy Partners – Operating, L.P.  
ADDRESS: 1602 W. Main, Artesia NM 88210 / Facility Name: WTX to EMSU Battery to Byrd Pump Segment  
CONTACT PARTY: Melanie Nolan PHONE: (214) 605-8303
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? \_\_\_\_\_  Yes \_\_\_\_\_ No  
If yes, give the Division order number authorizing the project: NOY1822242858
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review. **Figure 1 is attached. As shown, oil and gas lease information is not provided because the proposed injection zone (less than 40 feet below ground surface [bgs]) is not an oil and gas production zone.**
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail. **Please see supplemental information below.**
- VII. Attach data on the proposed operation, including: **Please see supplemental information below for answers to questions in Section VII**
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any. **None**
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted). **Proposed bioventing injection well construction logs attached.**
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken. **Laboratory analytical data for groundwater monitoring wells at the Site collected in 2020 and 2021 has been submitted to NMOCD in the November 2021 Site Characterization Report and Remediation Workplan and is attached (Table 1). Additional analytical information for wells not owned by HEP is not available. Additionally, wells not owned by HEP do not produce from the proposed injection interval (i.e., the vadose zone or less than 40 feet bgs).**
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water. **NA**
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form. **NA**
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Melanie Nolan

TITLE: Environmental Specialist

SIGNATURE: Melanie Nolan DATE: 10/12/2022

E-MAIL ADDRESS: Melanie.Nolan@hollyenergy.com

\* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted.  
Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

---

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 2

### III. WELL DATA – Please see supplemental information below for information required in Section III

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

**In a January 18, 2022, e-mail, the NMOCD waived the requirement for public notice with the caveat that public health will not be impacted. Public health is not anticipated to be impacted by ambient air injection during the bioventing pilot test. The NMOCD response was corroborated by a response from the Underground Injection Control (UIC) Group on January 19, 2022.**

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

---

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Side 1

### INJECTION WELL DATA SHEET

OPERATOR: Holly Energy Partners – Operating, L.P.

WELL NAME & NUMBER: **BV-1 through BV-4**

WELL LOCATION: **Area Surrounding: 32.583874, -103.317460** P 11 20S 36E  
FOOTAGE LOCATION UNIT LETTER SECTION TOWNSHIP RANGE

**WELLBORE SCHEMATIC**

See attached schematics for proposed bioventing construction details

**WELL CONSTRUCTION DATA**

Surface Casing

Hole Size: 10" (BV-1 – BV-3)/  
8" (BV-4)  
Top of Cement: 1.5 ft. bgs Casing Size: 2 inch  
Method Determined: Well Construction Log/Installation Notes

Intermediate Casing

Hole Size: NA Casing Size: \_\_\_\_\_  
Cemented with: \_\_\_\_\_ sx. **or** \_\_\_\_\_ ft<sup>3</sup>  
Top of Cement: \_\_\_\_\_ Method Determined: \_\_\_\_\_

Production Casing

Hole Size: NA Casing Size: \_\_\_\_\_  
Cemented with: \_\_\_\_\_ sx. **or** \_\_\_\_\_ ft<sup>3</sup>  
Top of Cement: \_\_\_\_\_ Method Determined: \_\_\_\_\_  
Total Depth: \_\_\_\_\_

Injection Interval

BV-1 – BV-3: perforated 4’-14’ bgs; 17’-29’ bgs, and 32’-39’ bgs  
BV-4: perforated 29’-39’ bgs

**(Perforated** or Open Hole; indicate which)

Side 2

**INJECTION WELL DATA SHEET**

Tubing Size: NA Lining Material: NA

Type of Packer: NA

Packer Setting Depth: NA

Other Type of Tubing/Casing Seal (if applicable): NA

Additional Data

1. Is this a new well drilled for injection?  Yes  No

If no, for what purpose was the well originally drilled?

2. Name of the Injection Formation: **Vadose zone (unsaturated soils) above uppermost groundwater-bearing unit (Ogallala Aquifer). Note: Injected ambient air is targeting the vadose zone, not the groundwater-bearing unit.**

3. Name of Field or Pool (if applicable): NA

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. \_\_\_\_\_

No

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: \_\_\_\_\_

NA

\_\_\_\_\_

\_\_\_\_\_

**Supplemental Information  
Form C-108  
Holly Energy Partners – Operating, L.P.  
WTX to EMSU Battery Release Site**

VI.

Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

**Figure 1 depicts wells located within 0.5 mile of pilot test injection well MW-1 (i.e., the area of review). Figure 2 depicts proposed bioventing wells relative to pilot test injection well MW-1. Available data for wells located within 0.5 mile of pilot test injection well MW-1 are summarized on the table below.**

NMOSE Well ID	Type	Construction	Date Drilled	Distance/ Direction from the Site	Depth (feet bgs)	Details
L14648-POD1	Monitoring	2-inch PVC	November 5, 2020	Site	50	MW-1: Monitoring well installed in 2020 for Site assessment activities.
L14648-POD2	Monitoring	2-inch PVC	November 5, 2020	Site	50	MW-4: Monitoring well installed in 2020 for Site assessment activities.
L14648-POD3	Monitoring	2-inch PVC	November 4, 2020	Site	50	MW-2: Monitoring well installed in 2020 for Site assessment activities.
L14648-POD4	Monitoring	2-inch PVC	November 4, 2020	Site	50	MW-3: Monitoring well installed in 2020 for Site assessment activities.
L14648-POD5	Monitoring	2-inch PVC	May 6, 2021	Site	50	MW-5: Monitoring well installed in 2021 for Site assessment activities.
L14648-POD6	Soil Boring	None	October 5, 2021	Site	35	SB-29: Soil boring installed and plugged in 2021 for Site assessment activities.
L14648-POD7	Soil Boring	None	October 6, 2021	Site	35	SB-30: Soil boring installed and plugged in 2021 for Site assessment activities.
L10251	Domestic/ Livestock Watering	Unknown	Prior to 1931	675 Feet to the Southwest	82	Windmill used for domestic uses and livestock watering was formerly located in this approximate location. Was in use prior to 1931. No longer present.
L15041 POD1	Livestock Watering	Up to 7-inch PVC	November 30, 2020	940 feet to the North-Northeast	63	63-foot-deep well permitted in November 2020 for livestock watering.
L14799 POD1	Livestock Watering	4.5-inch PVC	Unknown	0.5 mile to the Southwest	50	50-foot-deep well re-permitted in December 2019 for livestock watering.
L14816 POD7	Soil Boring	None	August 3, 2020	0.5 mile to the West	32	Environmental soil boring completed and plugged on August 3, 2020, as part of EMSU B #865 delineation by XTO Energy.

**Well construction logs for wells L14648-POD1 to -POD5 (MW-1 through MW-5) and soil borings L14648-POD6 (SB-29) and L14648-POD7 (SB-30) are attached. Permit applications, well records, and/or point of diversion summaries for wells and soil borings listed above, as available from NMOSE POD public data, are attached.**

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Form C-108  
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WTX to EMSU Battery Release Site

VII.

Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

1. Proposed average and maximum daily rate and volume of fluids to be injected;

**Average: 15 cubic feet per minute (cfm) per screened interval**

**Maximum: 60 cfm per nested well (BV-1, BV-2, and BV-3); 20 cfm per non-nested well (BV-4)**

2. Whether the system is open or closed;

**Open**

3. Proposed average and maximum injection pressure;

**Average: 6 pounds per square inch (psi)**

**Maximum: 15 psi**

4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,

**The injection “fluid” is ambient air, which will be injected into the vadose zone (unsaturated soils) above the uppermost groundwater-bearing unit. Ambient air is compatible with vadose zone soils and will facilitate aerobic bioremediation of hydrocarbon-affected soils.**

5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

**NA – Not for disposal purposes.**

VIII.

Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids

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WTX to EMSU Battery Release Site**

concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

**According to the Geologic Map of New Mexico, soils immediately beneath the Site are mapped as quaternary-aged Eolian and piedmont deposits (“Qep”), which consist of interlayered eolian sands and piedmont-slope deposits. These eolian deposits appear to be underlain by the southern edge of the Pliocene-aged Ogallala Formation. The Ogallala Formation consists of fine to very-fine sand but also includes minor quantities of clay, silt, coarse sand, and gravel. Most of the Ogallala is unconsolidated, although beds of caliche have formed near the top of the formation.**

**During investigations conducted at the Site in 2020 and 2021, the lithology was observed to consist of fine/clayey sand from the ground surface to a depth ranging from 5 to 10 feet bgs; and alternating layers of sandy clay and sandy caliche with cobbles to a depth of 35 to 50 feet bgs. Ambient air injection will be conducted in the vadose zone (unsaturated soils) above the uppermost groundwater-bearing unit, which was encountered beneath the Site at depths ranging from 36 to 38 feet bgs.**

III A.

The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

**L&K Ranch, LLC. [Unit P, Section 11, Township 20S, Range 36E]**

**BV-1 (Proposed)**

**Latitude: 32.583884**

**Longitude: -103.317466**

**BV-2 (Proposed)**

**Latitude: 32.583933**

**Longitude: -103.317483**

**BV-3 (Proposed)**

**Latitude: 32.583934**

**Longitude: -103.317411**

**BV-4 (Proposed)**

**Latitude: 32.583905**

**Longitude: -103.317230**

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(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

**BV-1 through BV-3**

**Casing size: Three 2-inch ID casings from ground surface to 14 feet bgs; ground surface to 29 feet bgs, and ground surface to 39 feet bgs**

**Depth: 39 feet bgs**

**Cement: Hydrated bentonite chips from 1.5 to 3.5 feet bgs, 14.5 to 16.5 feet bgs; and 29.5 to 31.5 feet bgs. Concrete from 1.5 feet bgs to surface.**

**Hole size: 10 inches**

**BV-4**

**Casing size: 2-inch ID from ground surface to 39 feet bgs**

**Depth: 39 feet bgs**

**Cement: hydrated bentonite chips from 1.5 to 28.5 feet bgs. Concrete from 1.5' bgs to surface.**

**Hole size: 8 inches**

(3) A description of the tubing to be used including its size, lining material, and setting depth.

**NA**

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

**NA**

III B.

The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

**Vadose zone soils (quaternary-aged Eolian and piedmont deposits and Ogallala Formation). Ambient air will not be injected into the uppermost groundwater-bearing unit.**

(2) The injection interval and whether it is perforated or open-hole.

**BV-1 through BV-3 vadose zone injection intervals: 4 to 14 ft. bgs, 17 to 29 ft. bgs, 32 to 39 ft. bgs; perforated with 0.020-inch slot screen. BV-4 vadose zone injection interval 29 to 39 ft. bgs; perforated with 0.020-inch slot screen.**

**Supplemental Information**  
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**Holly Energy Partners – Operating, L.P.**  
**WTX to EMSU Battery Release Site**

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

**Proposed wells will be drilled for ambient air injection.**

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

**None**

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

**None**

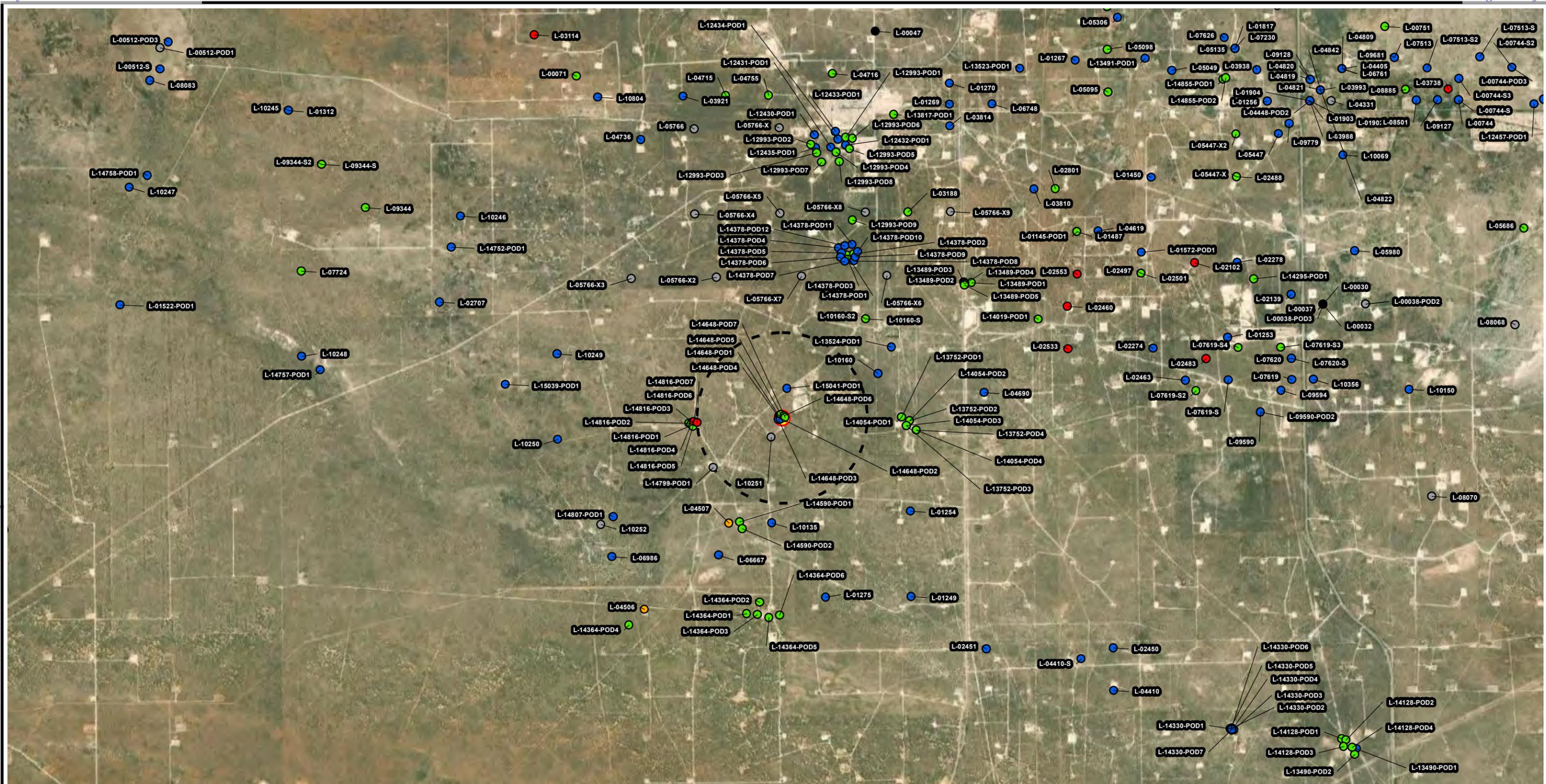
**Supplemental Information  
Form C-108  
Holly Energy Partners – Operating, L.P.  
WTX to EMSU Battery Release Site**

**Figures**

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 Ft US (Foot US)  
Map Rotation: 0

Plot Date: 3/3/2022 12:13:57 PM by MJAGOE -- LAYOUT: ANSIB(11"x17")  
Path: S:\1-PROJECTS\HOLLY ENERGY PARTNERS\466951\mxd\466951\_1\_Wellhead Protection Area Map.mxd



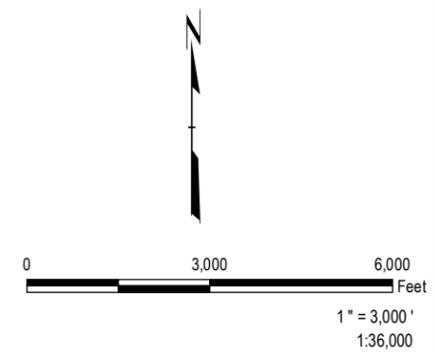
**LEGEND**

- NEW MEXICO OFFICE OF STATE ENGINEER (OSE) POINTS OF DIVERSION (PODS)
- ACTIVE
- INACTIVE
- PENDING
- CAPPED
- PLUGGED
- UNKNOWN

--- 1/2 MILE RADIUS

**NOTES:**  
 1. OSE PODs REPRESENT WATER WELLS AND GROUNDWATER RIGHTS THAT HAVE BEEN REGISTERED WITH THE OSE.  
 2. OIL AND GAS LEASE INFORMATION IS NOT PROVIDED BECAUSE THE PROPOSED INJECTION ZONE (LESS THAN 40 FEET BELOW GROUND SURFACE) IS NOT AN OIL AND GAS PRODUCTION ZONE.

AERIAL IMAGERY - ERSI WORLD IMAGERY

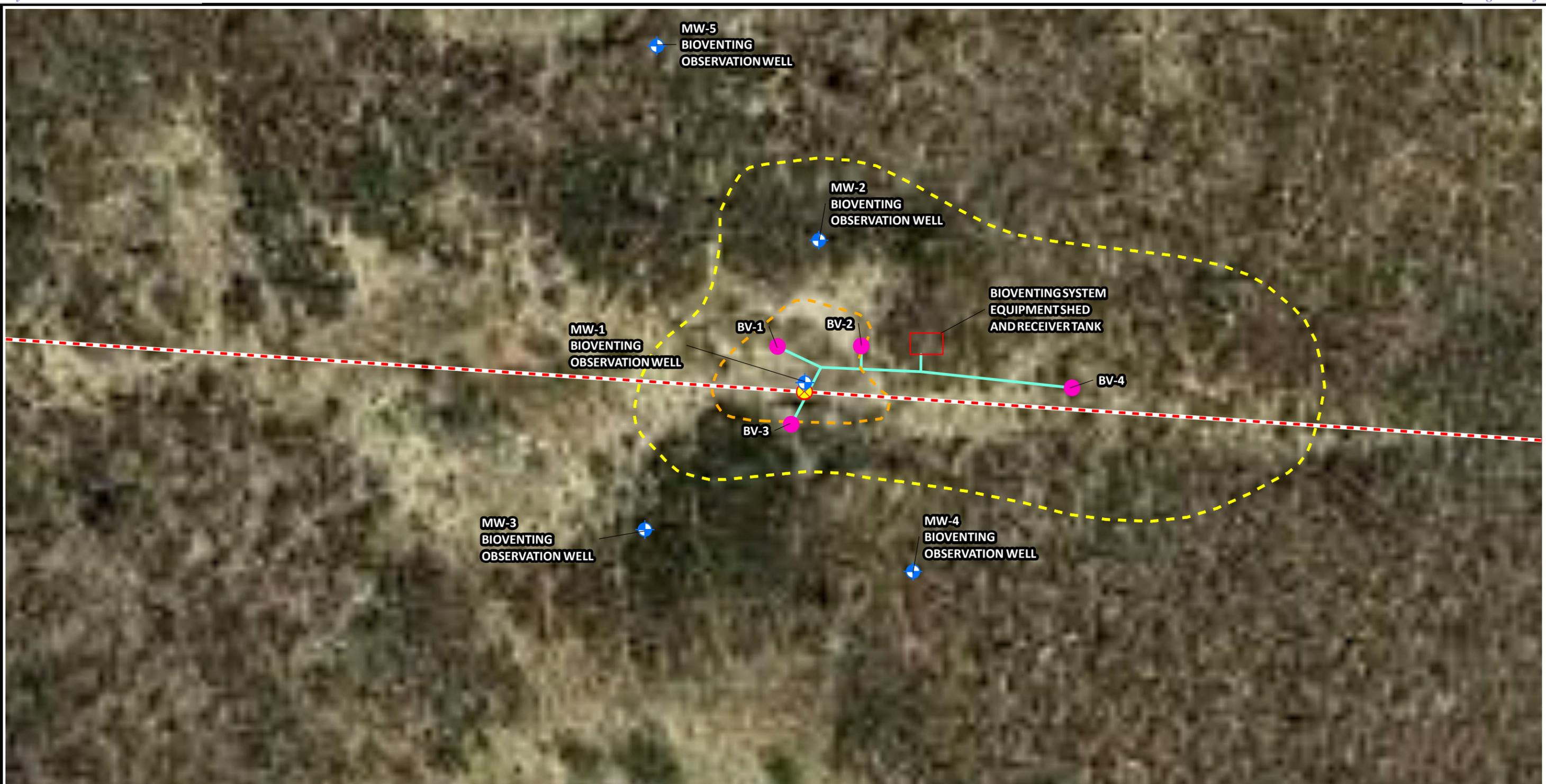


PROJECT: HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE: WELLHEAD PROTECTION AREA MAP	
DRAWN BY: M. JAGOE	PROJ NO.: 466951
CHECKED BY:	
APPROVED BY:	
DATE: MARCH 2022	<b>FIGURE 1</b>
505 East Huntland Drive Suite #250 Austin, TX 78752 Phone: 512.329.6080	
FILE NO.: 466951_1_Wellhead Protection Area Map.mxd	

TRC - GIS

Coordinate System: NAD 1983 2011 StatePlane New Mexico East FIPS 3001 FUS (Foot US)  
Map Rotation: 0

Plot Date: 10/6/2022 13:24:21 PM by M.JAGOE -- LAYOUT: ANSI\_B(11"x17")  
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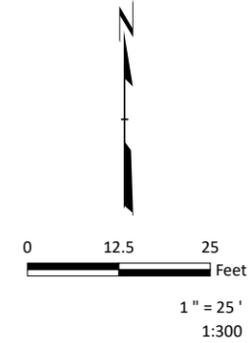


**LEGEND**

- OBSERVATION WELL
- 6" GATHERING LINE
- RELEASE
- PROPOSED BIOVENTING INJECTION WELL LOCATION
- EXTENT OF SOIL BENEATH 4 FEET BGS WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA
- FORMER EXTENT OF SURFACE SOIL (0-4 FEET BGS) WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA (NOTE 5)
- PROPOSED SYSTEM PIPING

SOURCE: AERIAL IMAGERY - GOOGLE AND THEIR DATA PARTNERS (11/2/2017)

- NOTES:**
1. PROPOSED BIOVENTING WELLS BV-1, BV-2, AND BV-3 ARE NESTED WELLS WITH THREE PROPOSED SCREEN INTERVALS EACH.
  2. PROPOSED BIOVENTING WELL BV-4 IS NON-NESTED WITH ONE PROPOSED SCREEN INTERVAL.
  3. SEE FIGURE 9 FOR ADDITIONAL SYSTEM DETAILS.
  4. BIOVENTING INJECTION RADIUS OF INFLUENCE OF 90 FEET ADDRESSES ENTIRE TPH-AFFECTED AREA. NOT SHOWN ON MAP.
  5. EXCAVATION OF SURFACE SOIL WITH TPH AND/OR CHLORIDE CONCENTRATIONS ABOVE SITE CLOSURE CRITERIA CONDUCTED TO DEPTH OF 4.5 FEET BGS IN AUGUST 2022.



PROJECT:		<b>HOLLY ENERGY PARTNERS - OPERATING, L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE</b>	
TITLE:		<b>PROPOSED FULL-SCALE BIOVENTING SYSTEM LOCATION MAP</b>	
DRAWN BY:	M. JAGOE	PROJ NO.:	497744
CHECKED BY:		<b>FIGURE 2</b>	
APPROVED BY:			
DATE:	OCTOBER 2022		
		505 EAST HUNTLAND DRIVE, SUITE 250 AUSTIN, TX 78752 PHONE: 512.329.6080 WWW.TRCSOLUTIONS.COM	
FILE NO.:	497744_8.mxd		

**Supplemental Information  
Form C-108  
Holly Energy Partners – Operating, L.P.  
WTX to EMSU Battery Release Site**

**Table**

**TABLE 1- FORM C-108 APPLICATION  
SUMMARY OF GROUNDWATER SAMPLE ANALYTICAL RESULTS  
WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE, LEA COUNTY, NM**

Monitoring Well ID	Sample Date	Constituent of Concern (COC)								
		BTEX (mg/L)				TPH (mg/L)			TDS (mg/L)	Chloride (mg/L)
		Benzene	Ethyl-benzene	Toluene	Total Xylenes	GRO	DRO	MRO		
<b>Groundwater Action Levels</b>		<b>0.005</b>	<b>0.7</b>	<b>1.0</b>	<b>0.62</b>	None	None	None	None	<b>250</b>
MW-1	11/7/2020	<0.005	<0.005	<0.010	<0.005	<b>0.098</b>	<b>0.084</b>	<0.10	<b>3000</b>	<b>1260</b>
	5/28/2021	<0.005	<0.005	<0.005	<0.005	<0.0050	<b>0.24</b>	<0.10	NA	<b>1270</b>
	5/28/2021 (Dup-04)	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.17</b>	<0.10	NA	<b>1250</b>
	10/12/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.052</b>	<0.10	NA	<b>1280</b>
MW-2	11/7/2020	<0.005	<0.005	<0.010	<0.005	<0.050	<0.050	<0.10	<b>2970</b>	<b>1210</b>
	5/25/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.12</b>	<0.10	NA	<b>1250</b>
	10/6/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050	<0.10	NA	<b>1220</b>
MW-3	11/7/2020	<0.005	<0.005	<0.010	<0.005	<0.050	<0.050	<0.10	<b>1970</b>	<b>736</b>
	5/25/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.11</b>	<0.10	NA	<b>849</b>
	10/12/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050	<0.10	NA	<b>862</b>
MW-4	11/7/2020	<0.005	<0.005	<0.010	<0.005	<0.050	<0.050	<0.10	<b>3020</b>	<b>1190</b>
	5/25/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.064</b>	<0.10	NA	<b>1310</b>
	10/6/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050	<0.10	NA	<b>1230</b>
	10/6/2021 (DUP-01)	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050	<0.10	NA	<b>1280</b>
MW-5	5/28/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<b>0.22</b>	<0.10	<b>3690</b>	<b>1170</b>
	10/12/2021	<0.005	<0.005	<0.005	<0.005	<0.050	<0.050	<0.10	NA	<b>1230</b>

**Notes:**

Groundwater Action Levels = Human health and drinking water standards for groundwater obtained from various sources

BTEX-Human Health Standards for Groundwater obtained from NMAC 20.6.2.3103 (A).

NMOCD does not have a groundwater action level for TPH.

Chloride-Other Standards for Domestic Water Supply obtained from NMAC 20.6.2.3103 (B).

BTEX = Benzene, Toluene, Ethylbenzene, and Total Xylenes by EPA Method 8260.

TPH = Total Petroleum Hydrocarbons by EPA Method 8015.

GRO = Gasoline Range Organics.

DRO = Diesel Range Organics.

MRO = Motor Oil Range Organics.

Chloride by EPA Method 300.0.

COC = constituent of concern.

mg/L = milligrams of COC per Liter of groundwater.

NA = not analyzed.

Detected concentrations reported in bold.

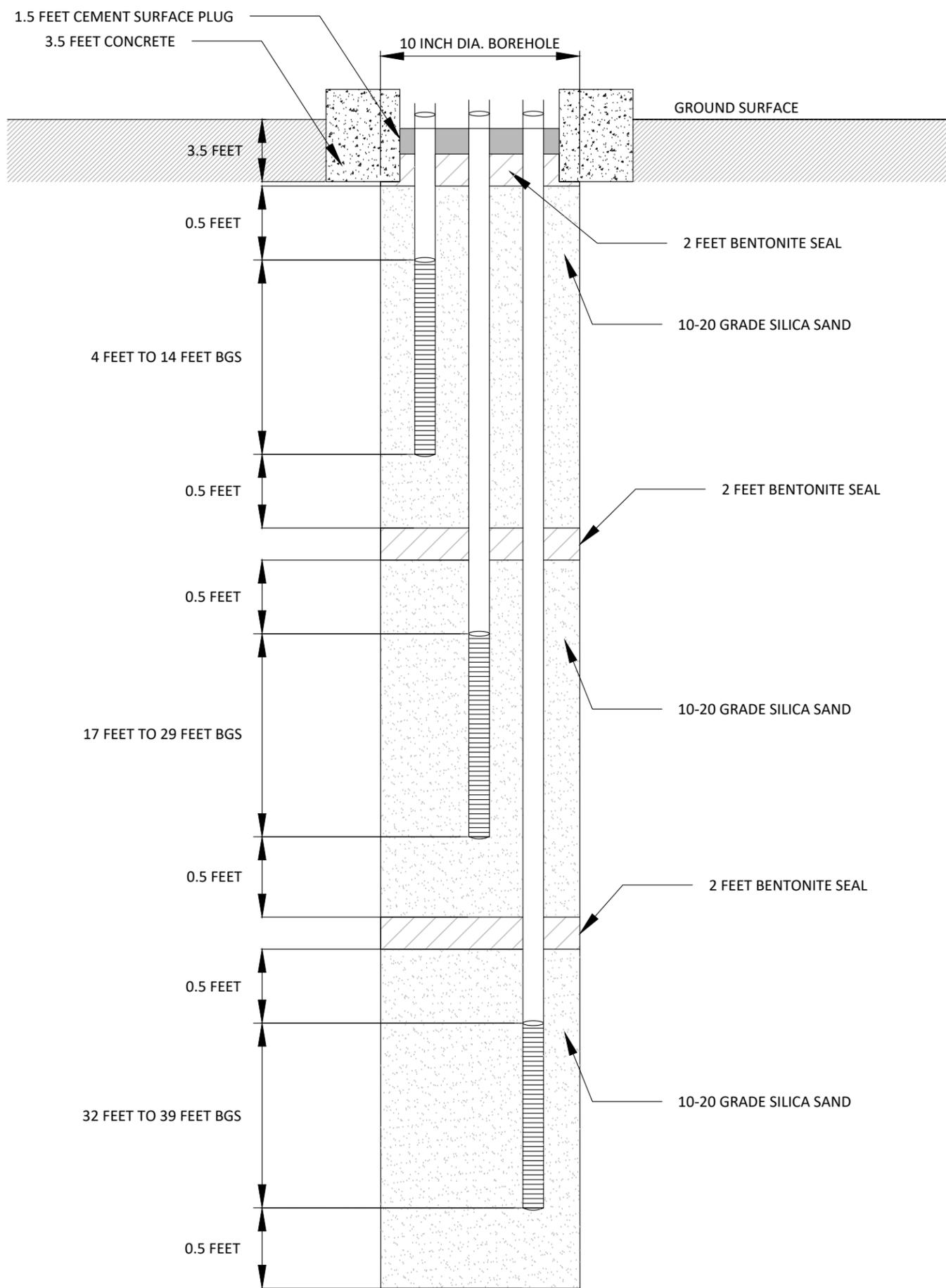
Gold shading represents concentration above Other Standards for Domestic Water Supply.

Duplicate sample data provided immediately below paired assessment sample.

Source: Table 4 of *Site Characterization Report and Remediation Workplan*, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858, dated November 2021.

**Supplemental Information  
Form C-108  
Holly Energy Partners – Operating, L.P.  
WTX to EMSU Battery Release Site**

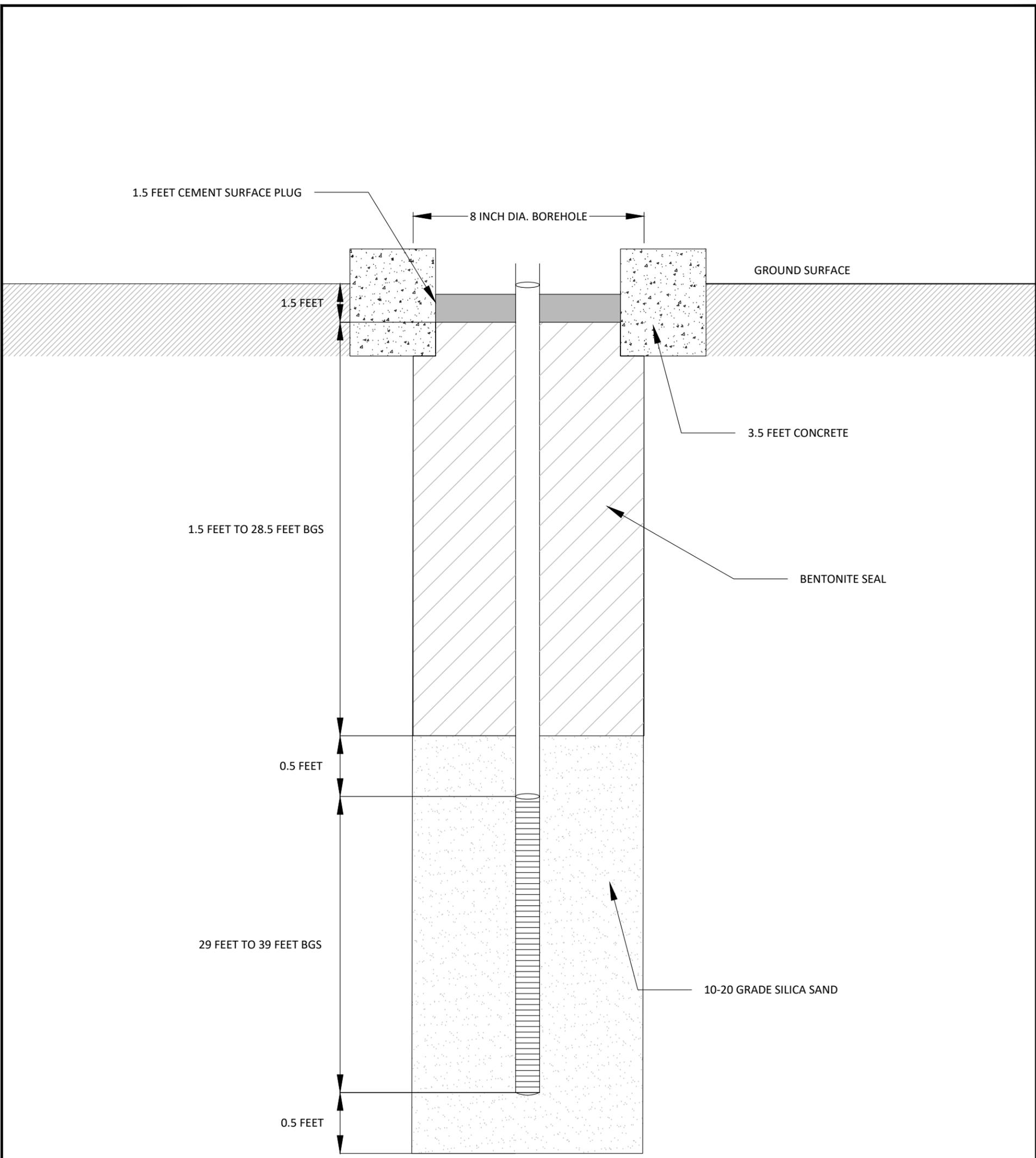
**Proposed Well Construction Logs – BV-1 through BV-4**



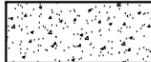
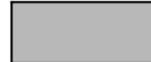
- NOTES:
1. BGS = BELOW GROUND SURFACE
  2. NOT DRAWN TO SCALE
  3. FINAL SCREEN INTERVALS AT BV-1, BV-2, AND BV-3 MAY BE ADJUSTED TO BIAS MORE PERMEABLE UNITS PENDING LITHOLOGY OBSERVED

	BENTONITE SEAL		10-20 GRADE SILICA SAND
	CONCRETE		CEMENT SURFACE PLUG
	0.020-INCH SCREENED INTERVAL		2" SCHEDULE 40 PVC

PROJECT: HOLLY ENERGY PARTNERS - OPERATING L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE: PROPOSED NON-NESTED BIOVENTING WELL SCHEMATIC	
DRAWN BY: TMAURUS	PROJ NO.: 497744
CHECKED BY: DHELBERT	
APPROVED BY: DHELBERT	
DATE: 9/19/2022	
	
505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
FILE NO.:	FIGURE 11.dwg



- NOTES:
1. BGS = BELOW GROUND SURFACE
  2. NOT DRAWN TO SCALE
  3. FINAL SCREEN INTERVAL AT BV-4 MAY BE ADJUSTED TO BIAS MORE PERMEABLE UNITS PENDING LITHOLOGY OBSERVED

	BENTONITE SEAL		10-20 GRADE SILICA SAND
	CONCRETE		CEMENT SURFACE PLUG
	0.020-INCH SCREENED INTERVAL		2" SCHEDULE 40 PVC

PROJECT:		HOLLY ENERGY PARTNERS - OPERATING L.P. MONUMENT, LEA COUNTY, NEW MEXICO WTX TO EMSU BATTERY RELEASE SITE	
TITLE:		PROPOSED NON-NESTED BIOVENTING WELL SCHEMATIC	
DRAWN BY:	TMAURUS	PROJ NO.:	497744
CHECKED BY:	DHELBERT		
APPROVED BY:	DHELBERT		
DATE:	9/19/2022		
		505 E. HUNTLAND DRIVE, STE. 250 AUSTIN, TX 78752 Phone: 512.454.8716 www.trcsolutions.com	
		FILE NO.:	FIGURE 11.dwg

**Supplemental Information  
Form C-108  
Holly Energy Partners – Operating, L.P.  
WTX to EMSU Battery Release Site**

**Well Information for Wells Within Area of Review**



# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)	
		(quarters are smallest to largest)	(NAD83 UTM in meters)
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64 Q16 Q4 Sec TwS Rng</b>	<b>X Y</b>
NA	L 14648 POD1	2 4 4 11 20S 36E	657890 3606425

---

<b>Driller License:</b> 1800	<b>Driller Company:</b> TALON/LPE	
<b>Driller Name:</b> MICHALSKY, JAROD.TY"ENER		
<b>Drill Start Date:</b> 11/03/2020	<b>Drill Finish Date:</b> 11/06/2020	<b>Plug Date:</b>
<b>Log File Date:</b> 01/19/2021	<b>PCW Rev Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b>
<b>Casing Size:</b> 2.00	<b>Depth Well:</b> 50 feet	<b>Depth Water:</b> 36 feet

---

<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	36	44	Sandstone/Gravel/Conglomerate
	44	46	Shale/Mudstone/Siltstone
	46	50	Sandstone/Gravel/Conglomerate

---

<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>
	30	50

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

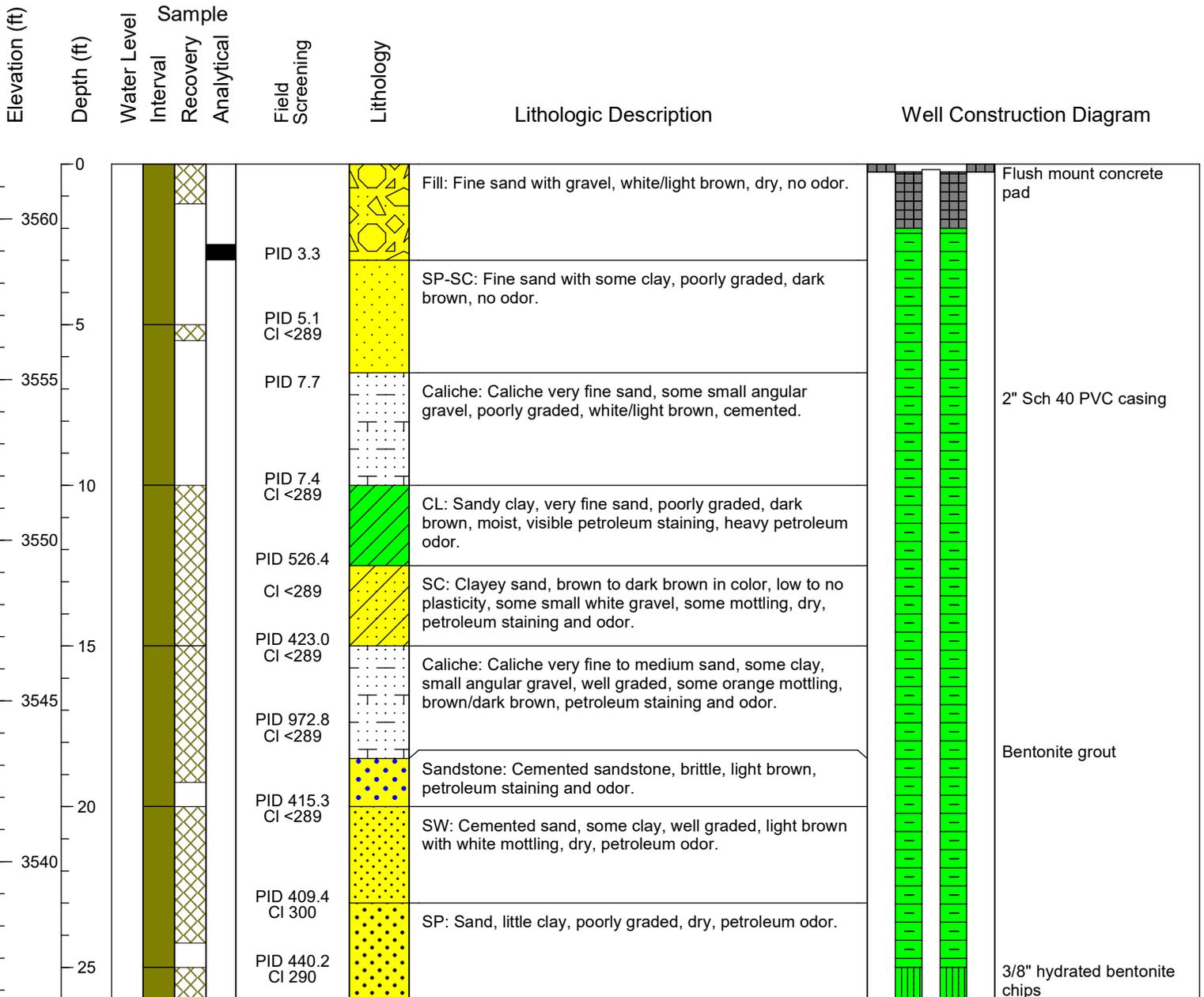
3/3/22 1:39 PM

POINT OF DIVERSION SUMMARY



# MW-01 (SB-05)

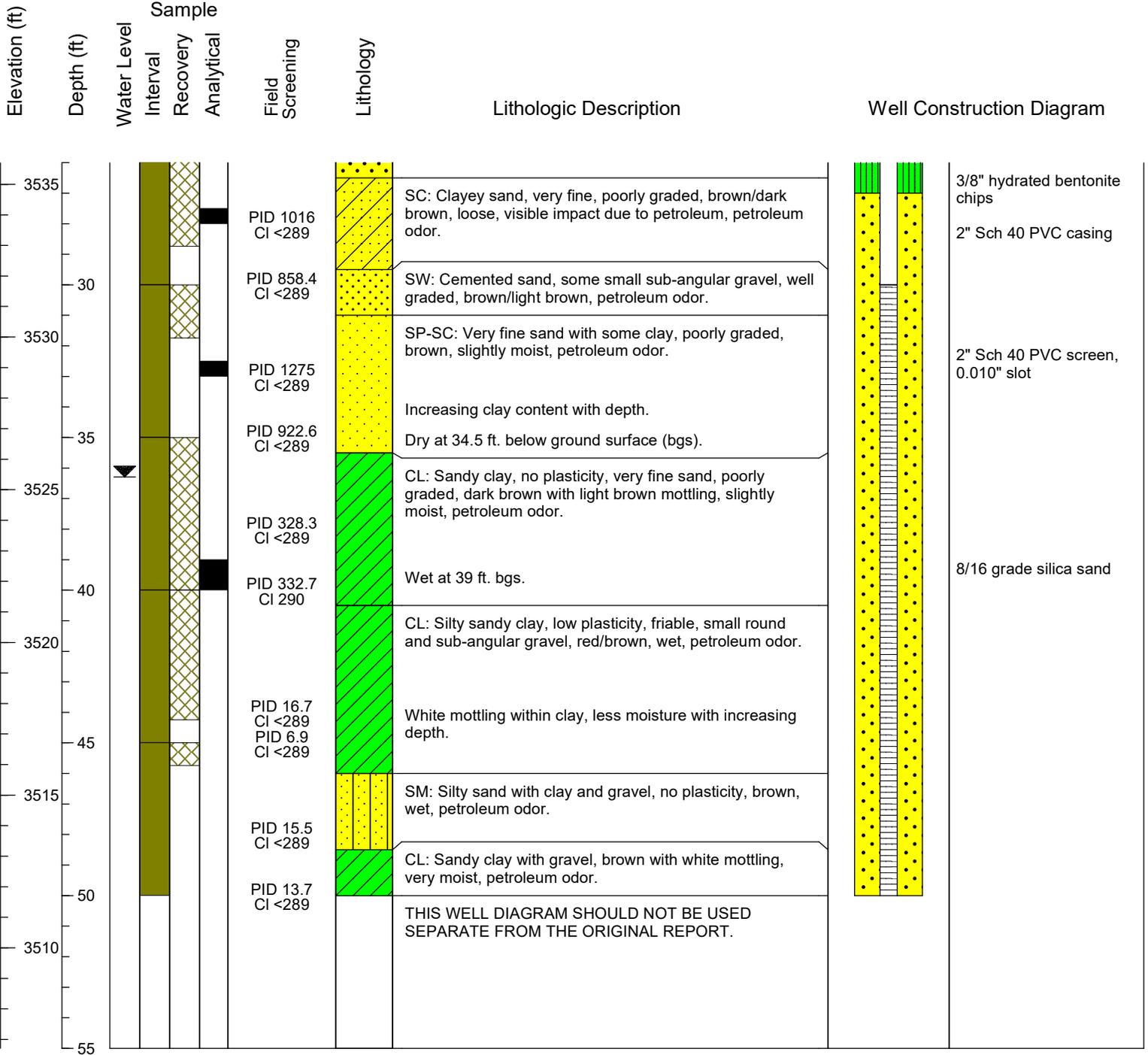
Client: Holly Energy Partners		TRC Project #: 374611
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 11/03/2020
Address: Klein Ranch, Monument, NM		Finish Date: 11/03/2020
Project: Monitoring Well Installation		Permit #: NA
Drilling Company: Talon LPE	Drilling Crew: Ronnie Rodriguez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Hollow Stem Auger		TRC Reviewer: R. Varnell
Boring Diameter (in): 7.88	Boring Depth (ft bgs): 50	Coord. System: NAD 83
Sampling Method: Grab		Latitude: 32.583908
Blow Count Method: NA		Longitude: -103.317464
Field Screening Parameter: Volatile organic compounds / Chlorine		Elevation Datum: NAD 88
Meter: MiniRAE Lite / Chlorine QuanTab Test Strips	Units: ppm / ppm	Ground Elevation (ft): 3561.71
Well Depth (ft bgs): 49.43	Well Depth (ft toc): 49.25	Well Elevation (ft): 3561.53
Casing Length (ft): 29.25	Screen Length (ft): 20.0	Well Measuring Point: Top of casing
Surface Completion: Flush mount concrete pad		Depth to Water (ft toc): 36.29
Well Development: Purged 55 gallons		Date/Time: 11/07/2020 16:00





# MW-01 (SB-05)

Client: Holly Energy Partners | Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release | Project #: 374611 | Page 2 of 2





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)							
		(quarters are smallest to largest)					(NAD83 UTM in meters)		
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
NA	L 14648 POD2	2	4	4	11	20S	36E	657892	3606410

<b>Driller License:</b> 1800	<b>Driller Company:</b> TALON/LPE	
<b>Driller Name:</b> MICHALSKY, JAROD.TY"ENER		
<b>Drill Start Date:</b> 11/05/2020	<b>Drill Finish Date:</b> 11/06/2020	<b>Plug Date:</b>
<b>Log File Date:</b> 01/19/2021	<b>PCW Rev Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b>
<b>Casing Size:</b> 2.00	<b>Depth Well:</b> 50 feet	<b>Depth Water:</b> 39 feet

<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	39	42	Sandstone/Gravel/Conglomerate
	42	50	Sandstone/Gravel/Conglomerate

<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>	
	30	50	

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

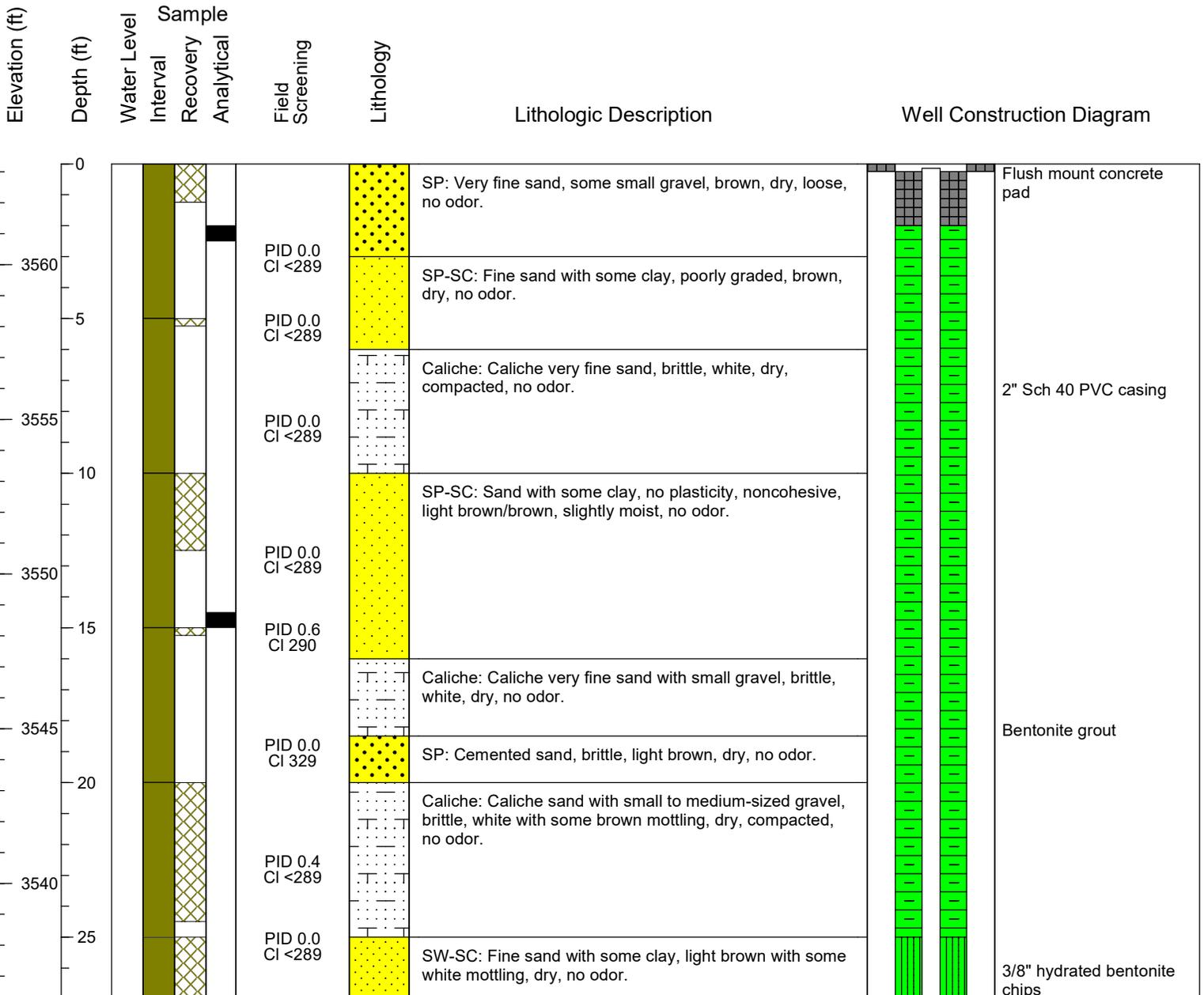
3/3/22 1:40 PM

POINT OF DIVERSION SUMMARY



# MW-04 (SB-08)

Client: Holly Energy Partners		TRC Project #: 374611
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 11/05/2020
Address: Klein Ranch, Monument, NM		Finish Date: 11/05/2020
Project: Monitoring Well Installation		Permit #: NA
Drilling Company: Talon LPE	Drilling Crew: Ronnie Rodriguez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Hollow Stem Auger		TRC Reviewer: R. Varnell
Boring Diameter (in): 7.88	Boring Depth (ft bgs): 50	Coord. System: NAD 83
Sampling Method: Grab		Latitude: 32.583756
Blow Count Method: NA		Longitude: -103.317355
Field Screening Parameter: Volatile organic compounds / Chlorine		Elevation Datum: NAD 88
Meter: MiniRAE Lite / Chlorine QuanTab Test Strips	Units: ppm / ppm	Ground Elevation (ft): 3563.26
Well Depth (ft bgs): 50.45	Well Depth (ft toc): 50.31	Well Elevation (ft): 3563.12
Casing Length (ft): 30.31	Screen Length (ft): 20.0	Well Measuring Point: Top of casing
Surface Completion: Flush mount concrete pad		Depth to Water (ft toc): 37.92
Well Development: Purged 100 gallons		Date/Time: 11/07/2020 11:45





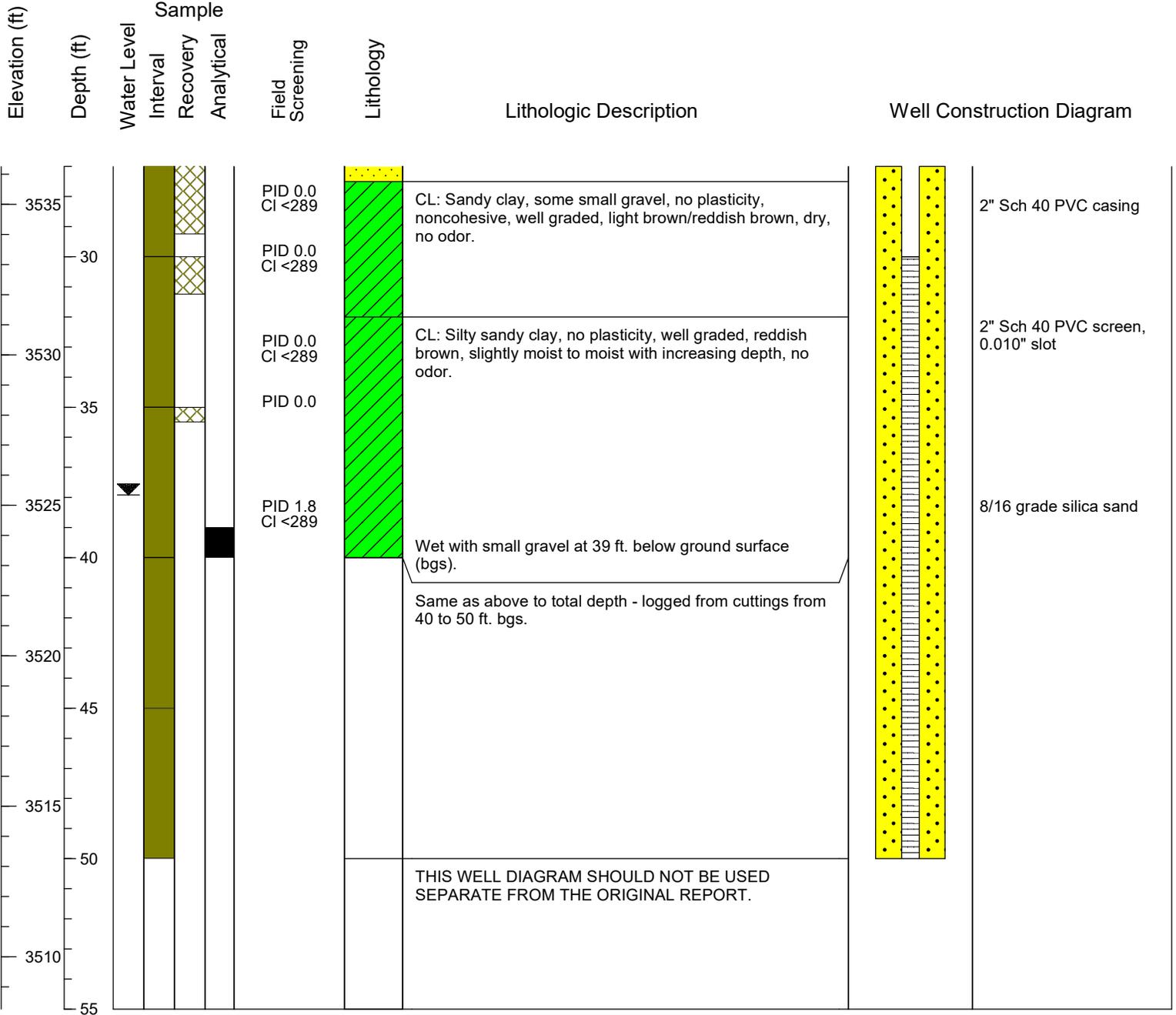
# MW-04 (SB-08)

Client: Holly Energy Partners

Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release

Project #: 374611

Page 2 of 2





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)							
		(quarters are smallest to largest)					(NAD83 UTM in meters)		
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tw</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
NA	L 14648 POD3	2	4	4	11	20S	36E	657884	3606394

<b>Driller License:</b> 1800	<b>Driller Company:</b> TALON/LPE	
<b>Driller Name:</b> MICHALSKY, JAROD.TY"ENER		
<b>Drill Start Date:</b> 11/04/2020	<b>Drill Finish Date:</b> 11/06/2020	<b>Plug Date:</b>
<b>Log File Date:</b> 01/19/2021	<b>PCW Rev Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b>
<b>Casing Size:</b> 2.00	<b>Depth Well:</b> 50 feet	<b>Depth Water:</b> 39 feet

<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	35	48	Sandstone/Gravel/Conglomerate
	48	50	Sandstone/Gravel/Conglomerate

<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>
	30	50

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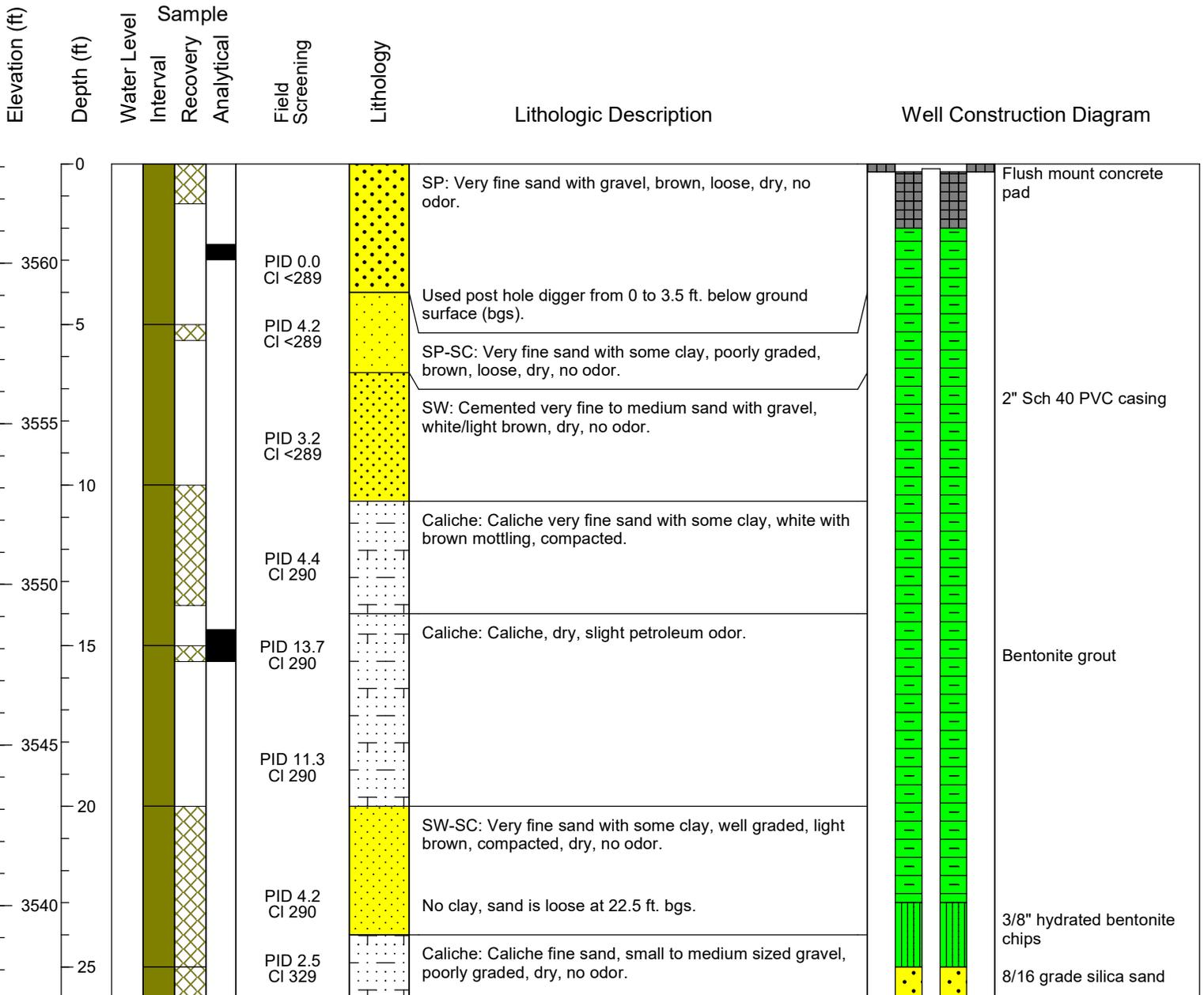
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POINT OF DIVERSION SUMMARY



# MW-02 (SB-06)

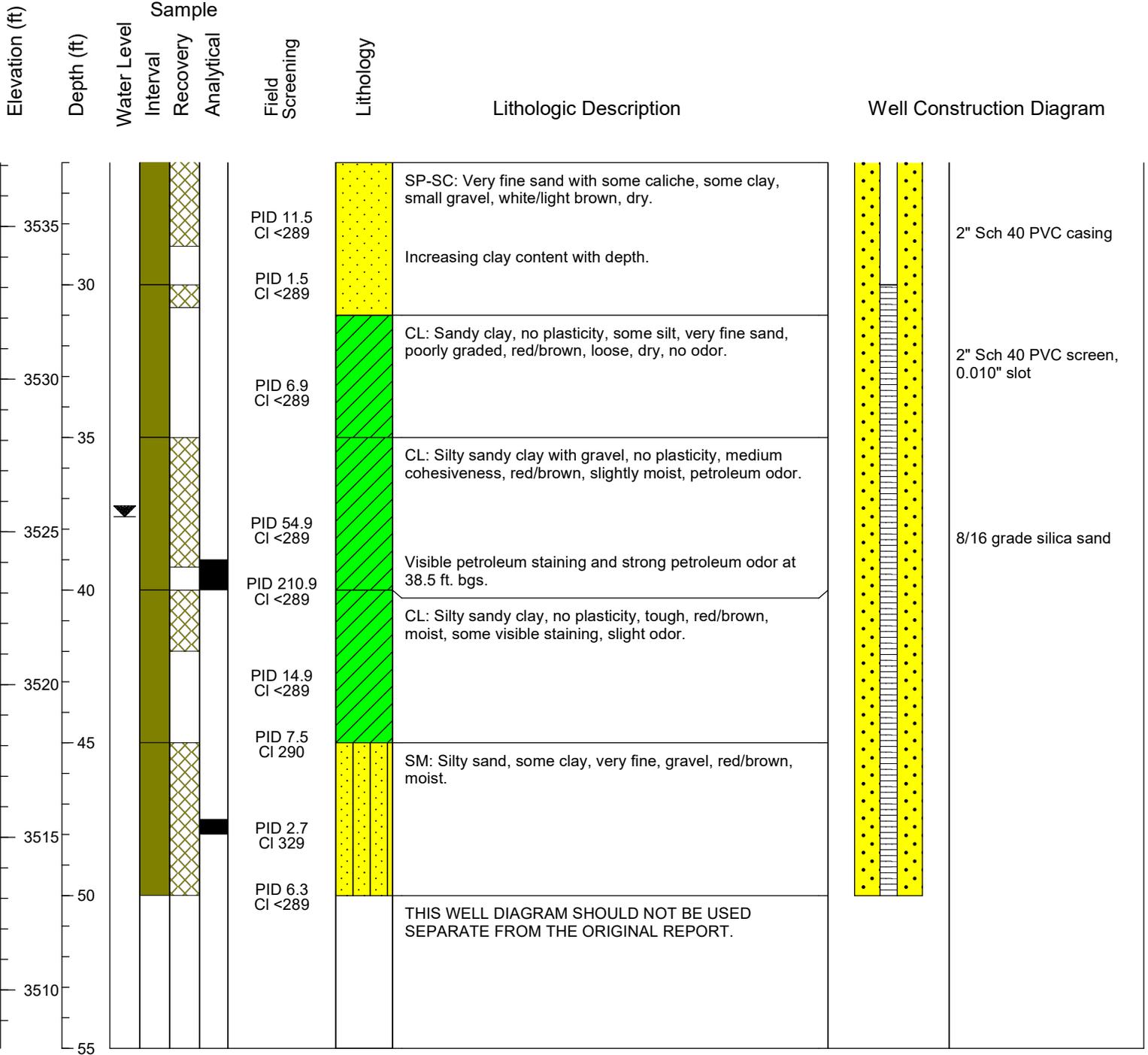
Client: Holly Energy Partners		TRC Project #: 374611
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 11/04/2020
Address: Klein Rach, Monument, NM		Finish Date: 11/04/2020
Project: Monitoring Well Installation		Permit #: NA
Drilling Company: Talon LPE	Drilling Crew: Ronnie Rodriguez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Hollow Stem Auger		TRC Reviewer: R. Varnell
Boring Diameter (in): 7.88	Boring Depth (ft bgs): 50	Coord. System: NAD 83
Sampling Method: Grab		Latitude: 32.584046
Blow Count Method: NA		Longitude: -103.317430
Field Screening Parameter: Volatile organic compounds / Chlorine		Elevation Datum: NAD 88
Meter: MiniRAE Lite / Chlorine QuanTab Test Strips	Units: ppm / ppm	Ground Elevation (ft): 3563.09
Well Depth (ft bgs): 49.64	Well Depth (ft toc): 49.49	Well Elevation (ft): 3562.94
Casing Length (ft): 29.49	Screen Length (ft): 20.0	Well Measuring Point: Top of casing
Surface Completion: Flush mount concrete pad		Depth to Water (ft toc): 37.59
Well Development: Purged 55 gallons		Date/Time: 11/07/2020 13:45



# TRC BORING LOG and WELL CONSTRUCTION

## MW-02 (SB-06)

Client: Holly Energy Partners | Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release | Project #: 374611 | Page 2 of 2





# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)							
		(quarters are smallest to largest)					(NAD83 UTM in meters)		
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
NA	L 14648 POD4	2	4	4	11	20S	36E	657903	3606396

<b>Driller License:</b> 1800	<b>Driller Company:</b> TALON/LPE	
<b>Driller Name:</b> MICHALSKY, JAROD.TY"ENER		
<b>Drill Start Date:</b> 11/04/2020	<b>Drill Finish Date:</b> 11/16/2020	<b>Plug Date:</b>
<b>Log File Date:</b> 01/19/2021	<b>PCW Rev Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b>
<b>Casing Size:</b> 2.00	<b>Depth Well:</b> 50 feet	<b>Depth Water:</b> 40 feet

<b>Water Bearing Stratifications:</b>	<b>Top</b>	<b>Bottom</b>	<b>Description</b>
	35	46	Sandstone/Gravel/Conglomerate
	46	50	Sandstone/Gravel/Conglomerate

<b>Casing Perforations:</b>	<b>Top</b>	<b>Bottom</b>
	30	50

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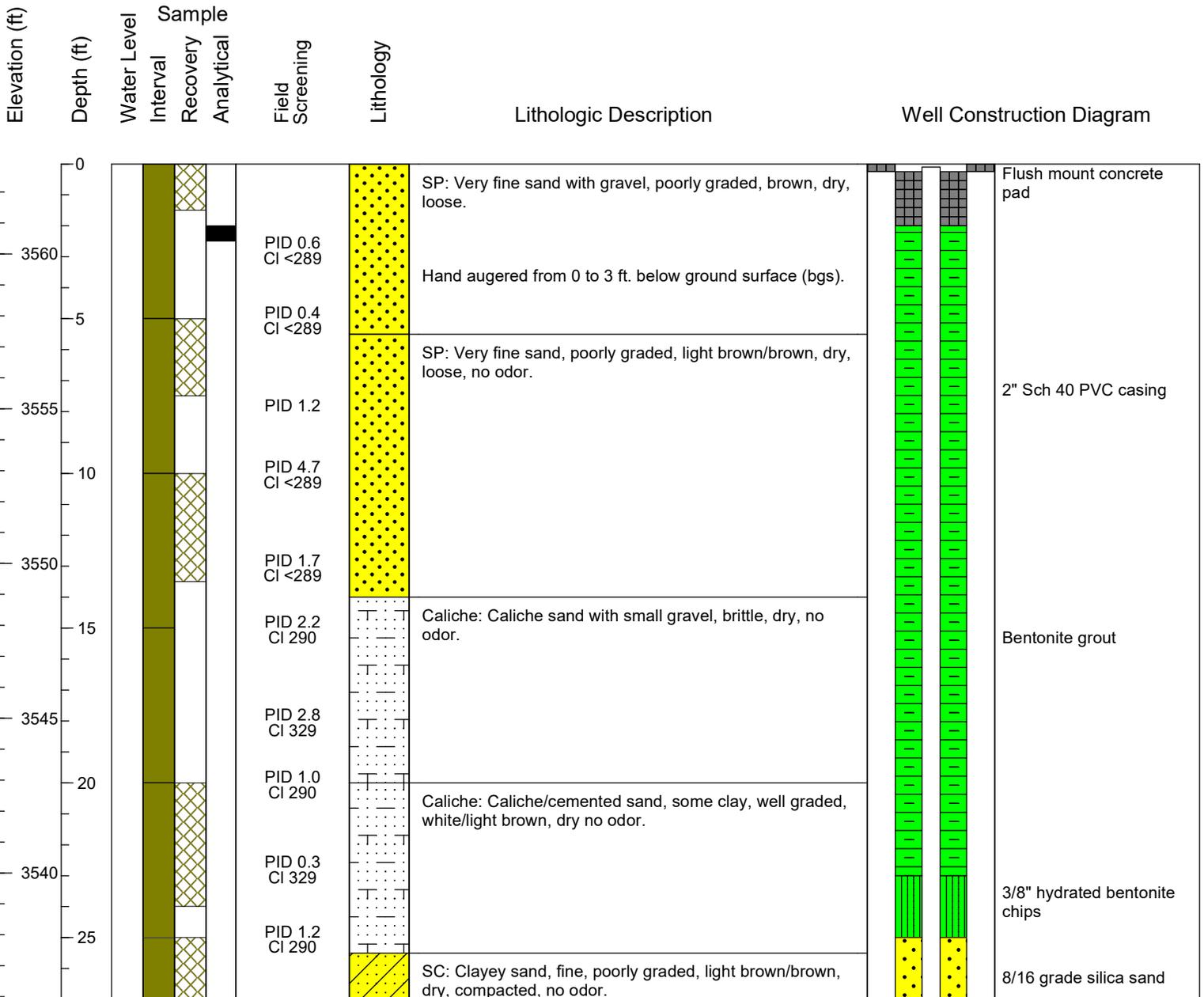
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POINT OF DIVERSION SUMMARY



# MW-03 (SB-07)

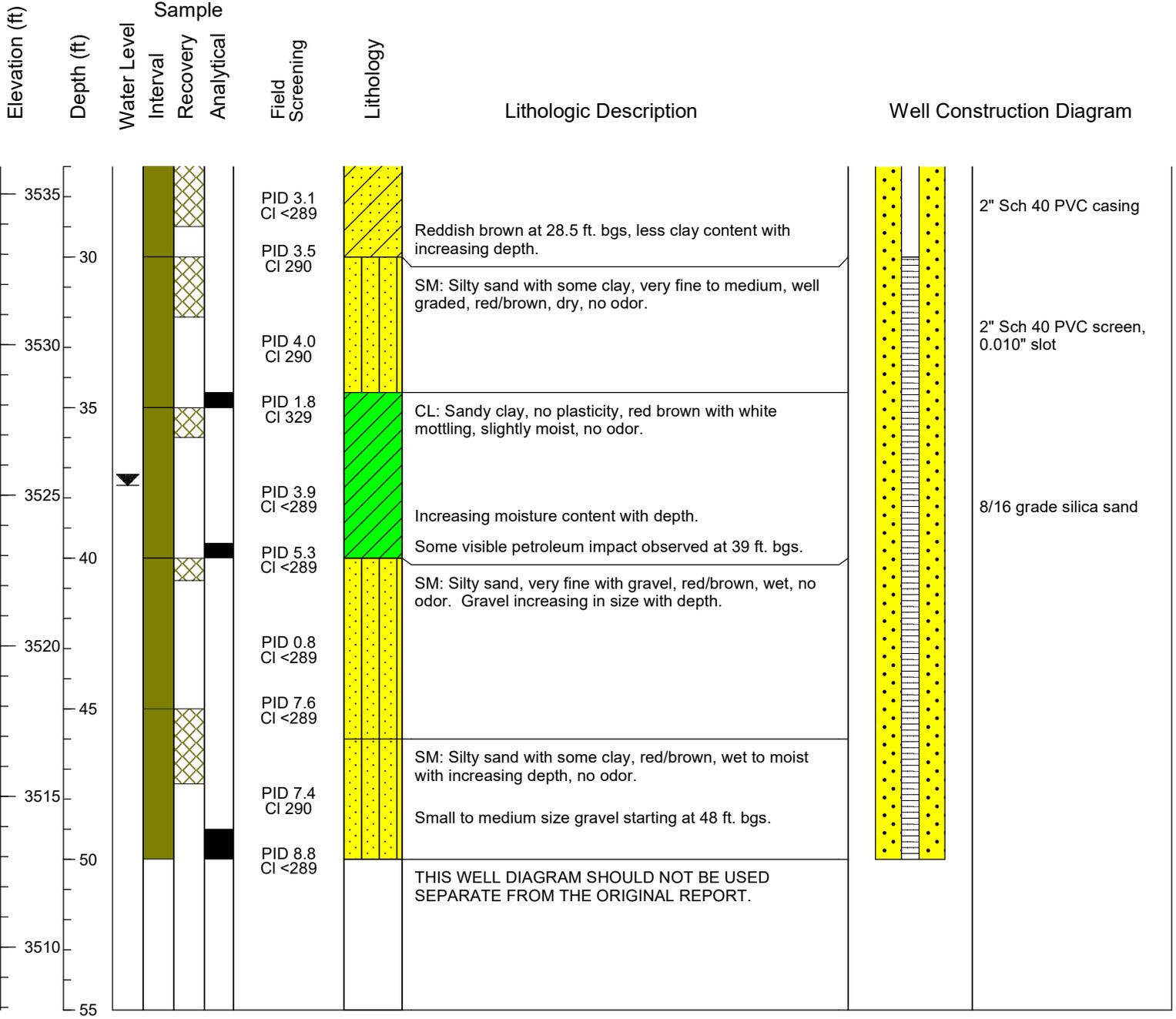
Client: Holly Energy Partners		TRC Project #: 374611
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 11/04/2020
Address: Klein Ranch, Monument, NM		Finish Date: 11/04/2020
Project: Monitoring Well Installation		Permit #: NA
Drilling Company: Talon LPE	Drilling Crew: Ronnie Rodriguez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Hollow Stem Auger		TRC Reviewer: R. Varnell
Boring Diameter (in): 7.88	Boring Depth (ft bgs): 50	Coord. System: NAD 83
Sampling Method: Grab		Latitude: 32.583788
Blow Count Method: NA		Longitude: 103.317594
Field Screening Parameter: Volatile organic compounds / Chlorine		Elevation Datum: NAD 88
Meter: MiniRAE Lite / Chlorine QuanTab Test Strips	Units: ppm / mg/L	Ground Elevation (ft): 3562.91
Well Depth (ft bgs): 50.03	Well Depth (ft toc): 49.93	Well Elevation (ft): 3562.81
Casing Length (ft): 29.93	Screen Length (ft): 20.0	Well Measuring Point: Top of casing
Surface Completion: Flush mount concrete pad		Depth to Water (ft toc): 37.58
Well Development: Purged 30 gallons		Date/Time: 11/07/2020 09:00





# MW-03 (SB-07)

Client: Holly Energy Partners | Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release | Project #: 374611 | Page 2 of 2





# New Mexico Office of the State Engineer Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)			
		Q64	Q16	Q4	Sec	Tw	Rng	X	Y
NA	L 14648 POD5	4	2	4	11	20S	36E	657907	3606439

Driller License:

Driller Company:

Driller Name:

Drill Start Date:

Drill Finish Date:

Plug Date:

Log File Date:

PCW Rcv Date:

Source:

Pump Type:

Pipe Discharge Size:

Estimated Yield:

Casing Size:

Depth Well:

Depth Water:

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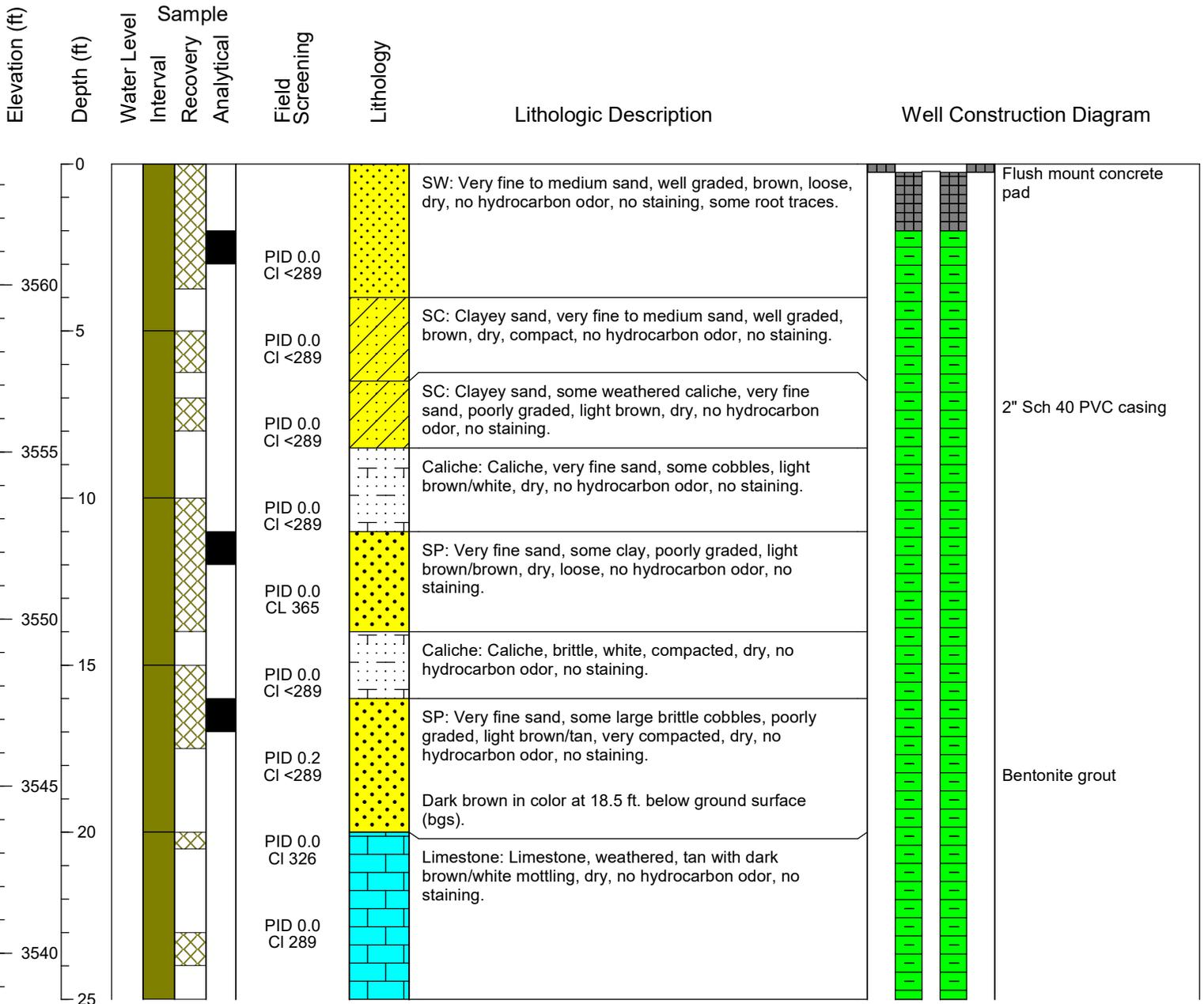
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POINT OF DIVERSION SUMMARY



# MW-05 (SB-25)

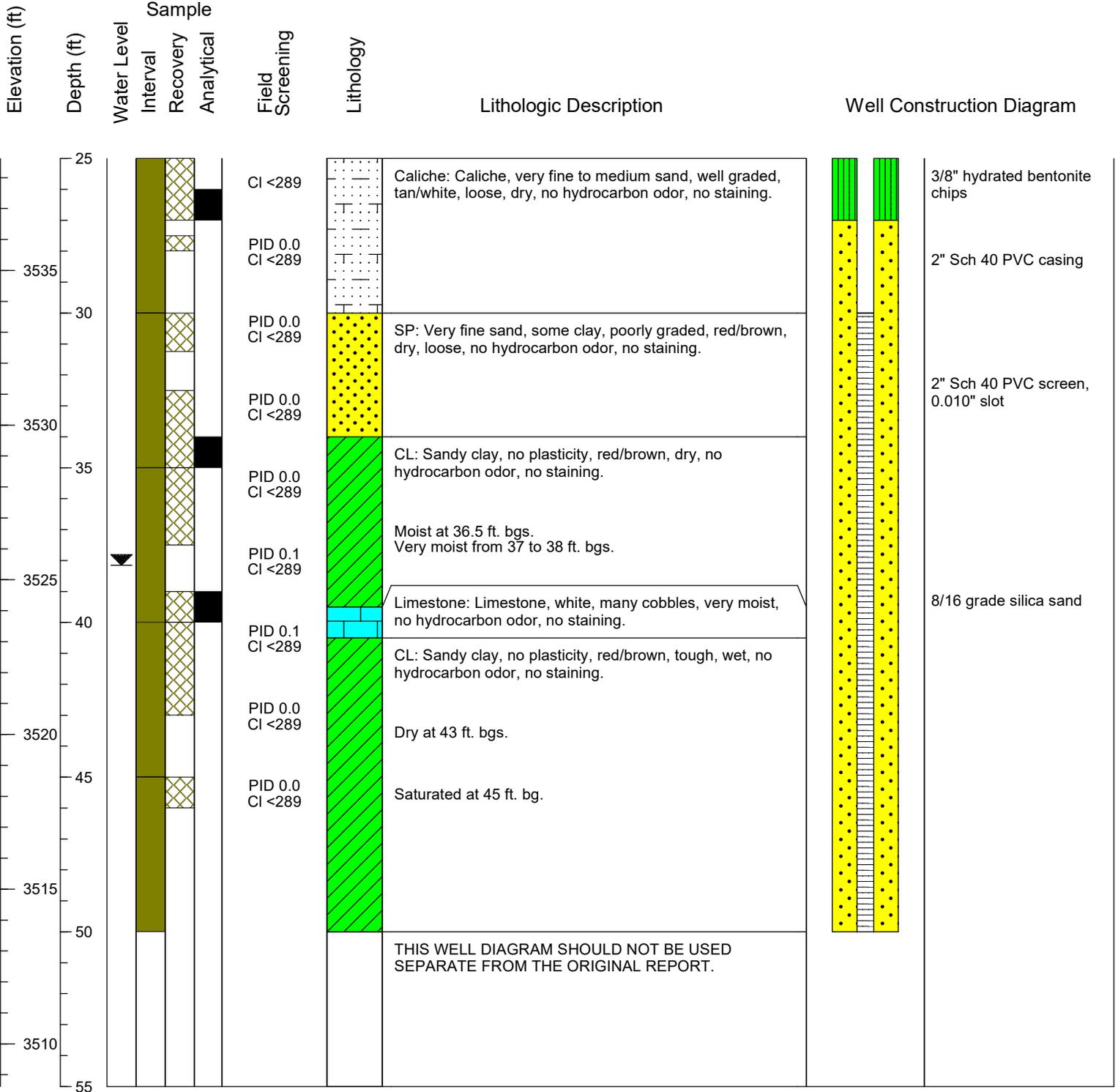
Client: Holly Energy Partners		TRC Project #: 426140
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 5/26/2021
Address: Klein Ranch, Monument, NM		Finish Date: 5/28/2021
Project: Site Assessment		Permit #: NA
Drilling Company: Talon LPE	Drilling Crew: Ronnie Rodriguez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Hollow-Stem Auger		TRC Reviewer: R. Varnell
Boring Diameter (in): 7.875	Boring Depth (ft bgs): 50.0	Coord. System: NAD 83
Sampling Method: Continuous 5-ft Core Sampler		Latitude: 32.584131
Blow Count Method: NA		Longitude: -103.317565
Field Screening Parameter: Volatile Organic Compounds / Chlorine		Elevation Datum: NAVD 88
Meter: MiniRAE Lite / Chlorine QuanTab Test Strips	Units: ppm / ppm	Ground Elevation (ft): 3536.62
Well Depth (ft bgs): 50.0	Well Depth (ft toc): 49.72	Well Elevation (ft): 3563.40
Casing Length (ft): 30.0	Screen Length (ft): 20.0	Well Measuring Point: Top of casing
Surface Completion: Flush mount concrete pad		Depth to Water (ft toc): 38.15
Well Development: Purged 7 liters		Date/Time: 5/28/2021 17:15





# MW-05 (SB-25)

Client: Holly Energy Partners | Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release | Project #: 426140 | Page 2 of 2





# New Mexico Office of the State Engineer

## Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)	
		(quarters are smallest to largest)				X	Y
		Q64	Q16	Q4	Sec	Tws	Rng
NA	L 14648 POD6	2	4	4	11	20S	36E
						657937	3606426

**Driller License:**

**Driller Company:**

**Driller Name:**

**Drill Start Date:**

**Drill Finish Date:**

**Plug Date:**

**Log File Date:**

**PCW Rcv Date:**

**Source:**

**Pump Type:**

**Pipe Discharge Size:**

**Estimated Yield:**

**Casing Size:**

**Depth Well:**

**Depth Water:**

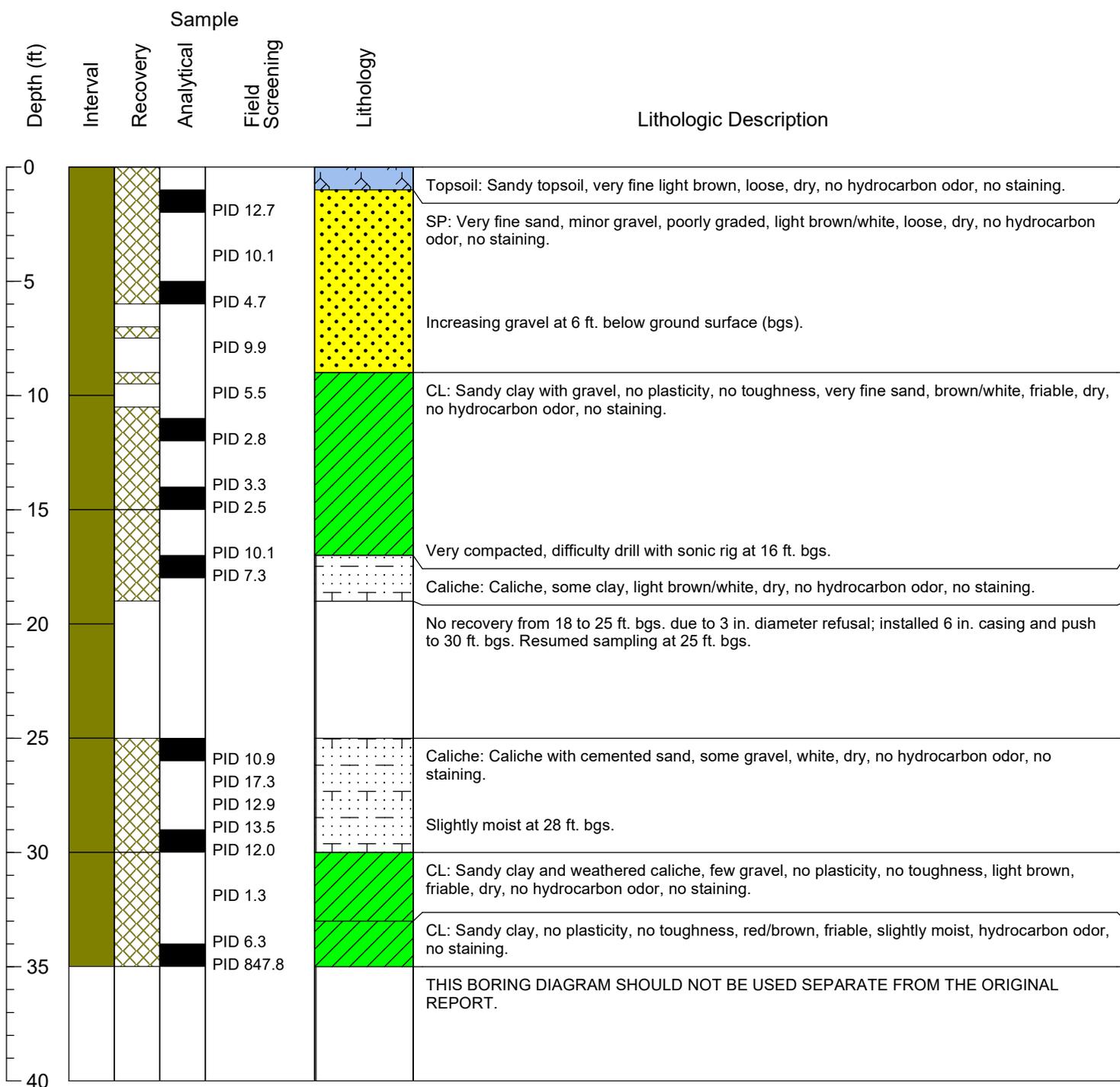
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POINT OF DIVERSION SUMMARY

# TRC BORING LOG SB-29

Client: Holly Energy Partners		TRC Project #: 426140
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 10/05/2021
Address: Klein Ranch, Monument, NM		Finish Date: 10/05/2021
Project: Site Assessment		Permit #: N/A
Drilling Company: Talon LPE	Drilling Crew: Daniel Martinez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Sonic Drilling		TRC Reviewer: R. Varnell
Boring Diameter (in): 6" outer; 3" inner	Boring Depth (ft bgs): 35.0	Coord. Sys.: WGS 84
Sampling Method: 10-ft Core Sampler; Continuous 5-ft Core Sampler		Latitude: 32.5838942
Blow Count Method: N/A	Grout: 3/8" Hydrated Bentonite Chips	Longitude: -103.3171446
Field Screening Parameter: Volatile Organic Compounds		Elevation Datum: N/A
Meter: MiniRAE 3000	Units: ppm	Ground Elevation (ft): NM





# New Mexico Office of the State Engineer

## Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)	
		(quarters are smallest to largest)				X	Y
		Q64	Q16	Q4	Sec	Tws	Rng
NA	L 14648 POD7	2	4	4	11	20S	36E
						657948	3606411

**Driller License:**

**Driller Company:**

**Driller Name:**

**Drill Start Date:**

**Drill Finish Date:**

**Plug Date:**

**Log File Date:**

**PCW Rcv Date:**

**Source:**

**Pump Type:**

**Pipe Discharge Size:**

**Estimated Yield:**

**Casing Size:**

**Depth Well:**

**Depth Water:**

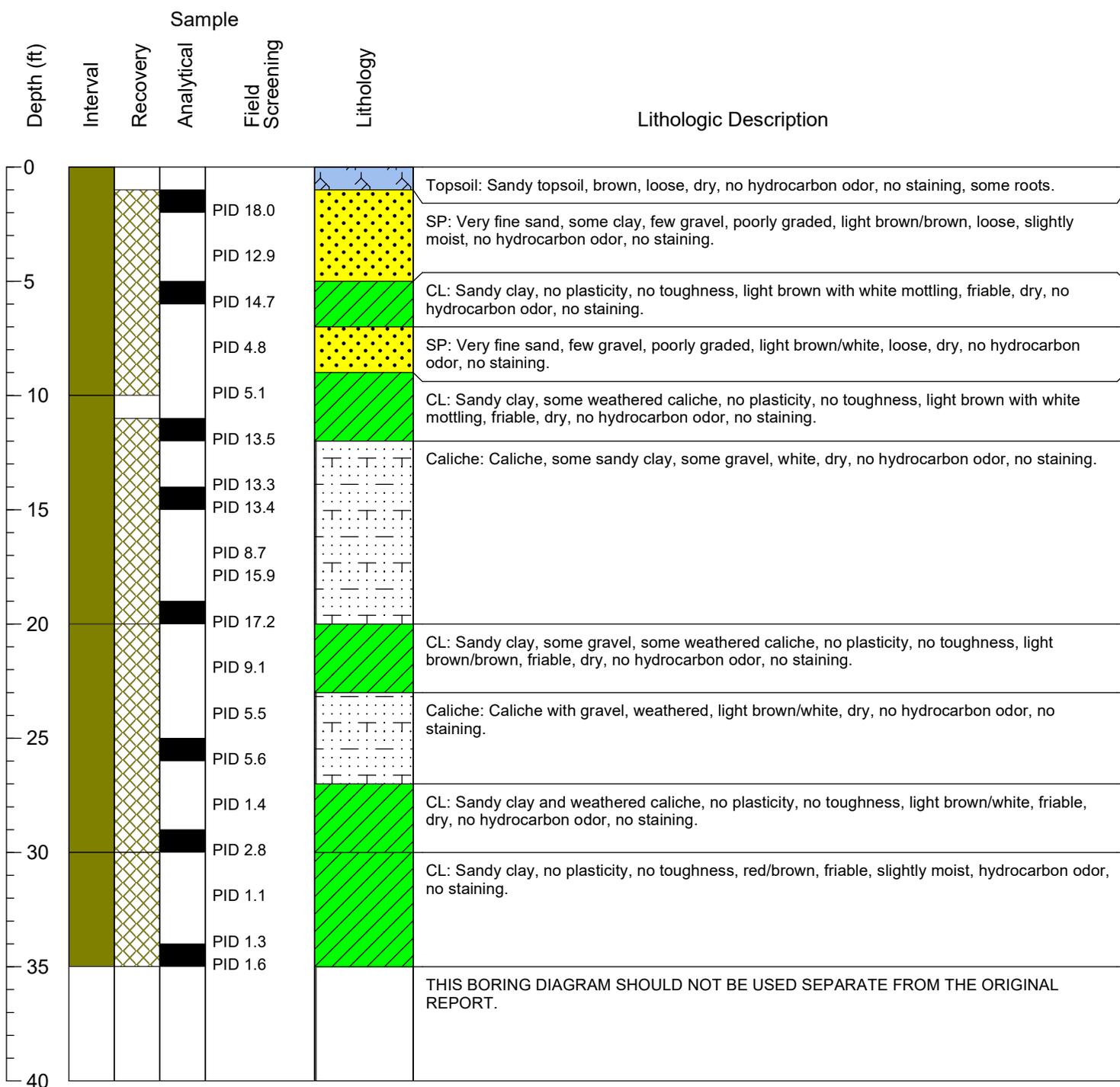
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POINT OF DIVERSION SUMMARY

# TRC BORING LOG SB-30

Client: Holly Energy Partners		TRC Project #: 426140
Site: WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release		Start Date: 10/06/2021
Address: Klein Ranch, Monument, NM		Finish Date: 10/06/2021
Project: Site Assessment		Permit #: N/A
Drilling Company: Talon LPE	Drilling Crew: Daniel Martinez & crew	TRC Site Rep.: C. Gaston
Drilling Method: Sonic Drilling		TRC Reviewer: R. Varnell
Boring Diameter (in): 6" outer; 3" inner	Boring Depth (ft bgs): 35.0	Coord. Sys.: N/A
Sampling Method: Continuous 10-ft Core Sampler		Latitude: NM
Blow Count Method: N/A	Grout: 3/8" Hydrated Bentonite Chips	Longitude: NM
Field Screening Parameter: Volatile Organic Compounds		Elevation Datum: N/A
Meter: MiniRAE 3000	Units: ppm	Ground Elevation (ft): NM



John R. D Antonio, Jr., P.E.  
State Engineer



Roswell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

**STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 671633  
File Nbr: L 14648

Apr. 21, 2020

RICHARD VARNELL  
HOLLY ENERGY PARTNERS  
505 EAST HUNTLAND DRIVE, STE. 250  
AUSTIN, TX 78752

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

- \* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.
- \* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.
- \* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.
- \* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website [www.ose.state.nm.us](http://www.ose.state.nm.us).

Sincerely,

A handwritten signature in blue ink, appearing to read "Claudia Guillen".

Claudia Guillen  
(575) 622-6521

Enclosure

explore

File No. L-14648 POD 1-4

**NEW MEXICO OFFICE OF THE STATE ENGINEER**



**WR-07 APPLICATION FOR PERMIT TO DRILL  
A WELL WITH NO WATER RIGHT**



(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input checked="" type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

<input type="checkbox"/> Temporary Request - Requested Start Date:	Requested End Date:
--	---------------------

Plugging Plan of Operations Submitted?  Yes  No

**1. APPLICANT(S)**

Name: Holly Energy Partners	Name:
Contact or Agent: check here if Agent <input checked="" type="checkbox"/> Richard Varnell	Contact or Agent: check here if Agent <input type="checkbox"/>
Mailing Address: 505 East Huntland Drive, Ste. 250	Mailing Address:
City: Austin	City:
State: Texas Zip Code: 78752	State: Zip Code:
Phone: 512-297-3019 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell Phone (Work): 512-626-3990	Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell Phone (Work):
E-mail (optional): RVarnell@trccompanies.com	E-mail (optional):

OSE DJJ APR 1 2020 PM4:58

FOR OSE INTERNAL USE Application for Permit, Form WR-07, Rev 11/17/16

File No.: L-14648	Trn. No.: 67163B	Receipt No.: 2-41879
Trans Description (optional): MON		
Sub-Basin: L	PCW/LOG Due Date: 4/21/2021	

**2. WELL(S)** Describe the well(s) applicable to this application.

**Location Required:** Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).  
 District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

NM State Plane (NAD83) (Feet)       UTM (NAD83) (Meters)       Lat/Long (WGS84) (to the nearest 1/10<sup>th</sup> of second)  
 NM West Zone       Zone 12N  
 NM East Zone       Zone 13N  
 NM Central Zone

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves, Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
MW-1 (POD 1, WTX to EMSU)	-103.317770 W	32.584056 N	NE 1/4 of SE 1/4 of S11 T20S R36E
MW-2 (POD 3, WTX to EMSU)	-103.317840 W	32.583777 N	SE 1/4 of SE 1/4 of S11 T20S R36E
MW-3 (POD 4, WTX to EMSU)	-103.317635 W	32.583793 N	SE 1/4 of SE 1/4 of S11 T20S R36E
MW-4 (POD 2, WTX to EMSU)	-103.317748 W	32.583926 N	SE 1/4 of SE 1/4 of S11 T20S R36E

**NOTE:** If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)  
 Additional well descriptions are attached:  Yes  No If yes, how many \_\_\_\_\_

Other description relating well to common landmarks, streets, or other:  
 Site is located at 32.583989, -103.317743, approximately 1 mile west of Maddox Road (Highway 41).

Well is on land owned by: Property owner - L&K Ranch, LLC

Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached?  Yes  No  
 If yes, how many \_\_\_\_\_

Approximate depth of well (feet): 65 ft.      Outside diameter of well casing (inches): 2 in.

Driller Name: Talon LPE      Driller License Number: WD-1575

**3. ADDITIONAL STATEMENTS OR EXPLANATIONS**

OSE DTI APR 1 2020 PM 4:56

\*\*\*RENEWING PERMIT FOR MW-1, MW-2, MW-3, and MW-4 (POD 1-4), PREVIOUSLY SUBMITTED FEBRUARY 25, 2019 AND APPROVED MARCH 18, 2019. \*\*\*\*  
 \*\*\*FILE NO: L 14648; TRN NO: 640469\*\*\*

Site is WTX To EMSU Battery by Byrd Pump Crude Oil Release Site, 1RP-5154.

Monitoring for chlorides, BTEX, TDS, and TPH. All four wells will be installed following NMOSE regulations. Monitoring wells will be utilized for the extent of the project. Potential impacts to groundwater by the substances will be considered in regards to proper grouting of the well casing annual spaces and plugging and abandonment at completion of monitoring project.

Monitoring well locations will be reviewed for utilities and may be slightly adjusted based on field findings.

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: L-14648	Trn No.: 671633
-------------------	-----------------

**4. SPECIFIC REQUIREMENTS:** The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

<p><b>Exploratory:</b>  <input type="checkbox"/> Include a description of any proposed pump test, if applicable.</p>	<p><b>Pollution Control and/or Recovery:</b>  <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:  <input type="checkbox"/> A description of the need for the pollution control or recovery operation.  <input type="checkbox"/> The estimated maximum period of time for completion of the operation.  <input type="checkbox"/> The annual diversion amount.  <input type="checkbox"/> The annual consumptive use amount.  <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation.  <input type="checkbox"/> The method and place of discharge.  <input type="checkbox"/> The method of measurement of water produced and discharged.</p>	<p><b>Construction De-Watering:</b>  <input type="checkbox"/> Include a description of the proposed dewatering operation,  <input type="checkbox"/> The estimated duration of the operation,  <input type="checkbox"/> The maximum amount of water to be diverted,  <input type="checkbox"/> A description of the need for the dewatering operation, and,  <input type="checkbox"/> A description of how the diverted water will be disposed of.</p>	<p><b>Mine De-Watering:</b>  <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:  <input type="checkbox"/> A description of the need for mine dewatering.  <input type="checkbox"/> The estimated maximum period of time for completion of the operation.  <input type="checkbox"/> The source(s) of the water to be diverted.  <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s).  <input type="checkbox"/> The maximum amount of water to be diverted per annum.  <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation.  <input type="checkbox"/> The quality of the water.  <input type="checkbox"/> The method of measurement of water diverted.</p>
<p><b>Monitoring:</b>  <input checked="" type="checkbox"/> Include the reason for the monitoring well, and,  <input type="checkbox"/> The duration of the planned monitoring.</p>	<p><input type="checkbox"/> The source of water to be injected.  <input type="checkbox"/> The method of measurement of water injected.  <input type="checkbox"/> The characteristics of the aquifer.  <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system.  <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department.  <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.</p>	<p><b>Ground Source Heat Pump:</b>  <input type="checkbox"/> Include a description of the geothermal heat exchange project,  <input type="checkbox"/> The number of boreholes for the completed project and required depths.  <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and,  <input type="checkbox"/> The duration of the project.  <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.</p>	<p><input type="checkbox"/> The method of measurement of water diverted.  <input type="checkbox"/> The recharge of water to the aquifer.  <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project.  <input type="checkbox"/> The method and place of discharge.  <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project.  <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights.  <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.</p>

**ACKNOWLEDGEMENT**

I, We (name of applicant(s)), Richard Varnell Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

OSE DIT APR 1 2020 PM4:56

Richard Varnell  
Applicant Signature

\_\_\_\_\_  
Applicant Signature

**ACTION OF THE STATE ENGINEER**

This application is:

approved  partially approved  denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 21 day of April 20 20, for the State Engineer,

John R. D'Antonio Jr., P.E., State Engineer

By: [Signature]  
Signature

Print

Title: Juan Hernandez, Water Resources Manager I  
Print



FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: L-14648

Trn No.: 671633

**NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE**

**SPECIFIC CONDITIONS OF APPROVAL**

- 17-1B Depth of the well shall not exceed the thickness of the Ogallala formation.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.
- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.

Trn Desc: L 14648 POD1-4

File Number: L 14648

Trn Number: 671633

**NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE**

**SPECIFIC CONDITIONS OF APPROVAL (Continued)**

- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record.  
The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- 17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.
- LOG The Point of Diversion L 14648 POD1 must be completed and the Well Log filed on or before 04/21/2021.
- LOG The Point of Diversion L 14648 POD2 must be completed and the Well Log filed on or before 04/21/2021.

Trn Desc: L 14648 POD1-4

File Number: L 14648

Trn Number: 671633

NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

LOG The Point of Diversion L 14648 POD3 must be completed and the Well Log filed on or before 04/21/2021.

LOG The Point of Diversion L 14648 POD4 must be completed and the Well Log filed on or before 04/21/2021.

IT IS THE PERMITTEE'S RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd: Date Rcvd. Corrected:  
Formal Application Rcvd: 04/01/2020 Pub. of Notice Ordered:  
Date Returned - Correction: Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 21 day of Apr A.D., 2020

John R. D Antonio, Jr., P.E., State Engineer

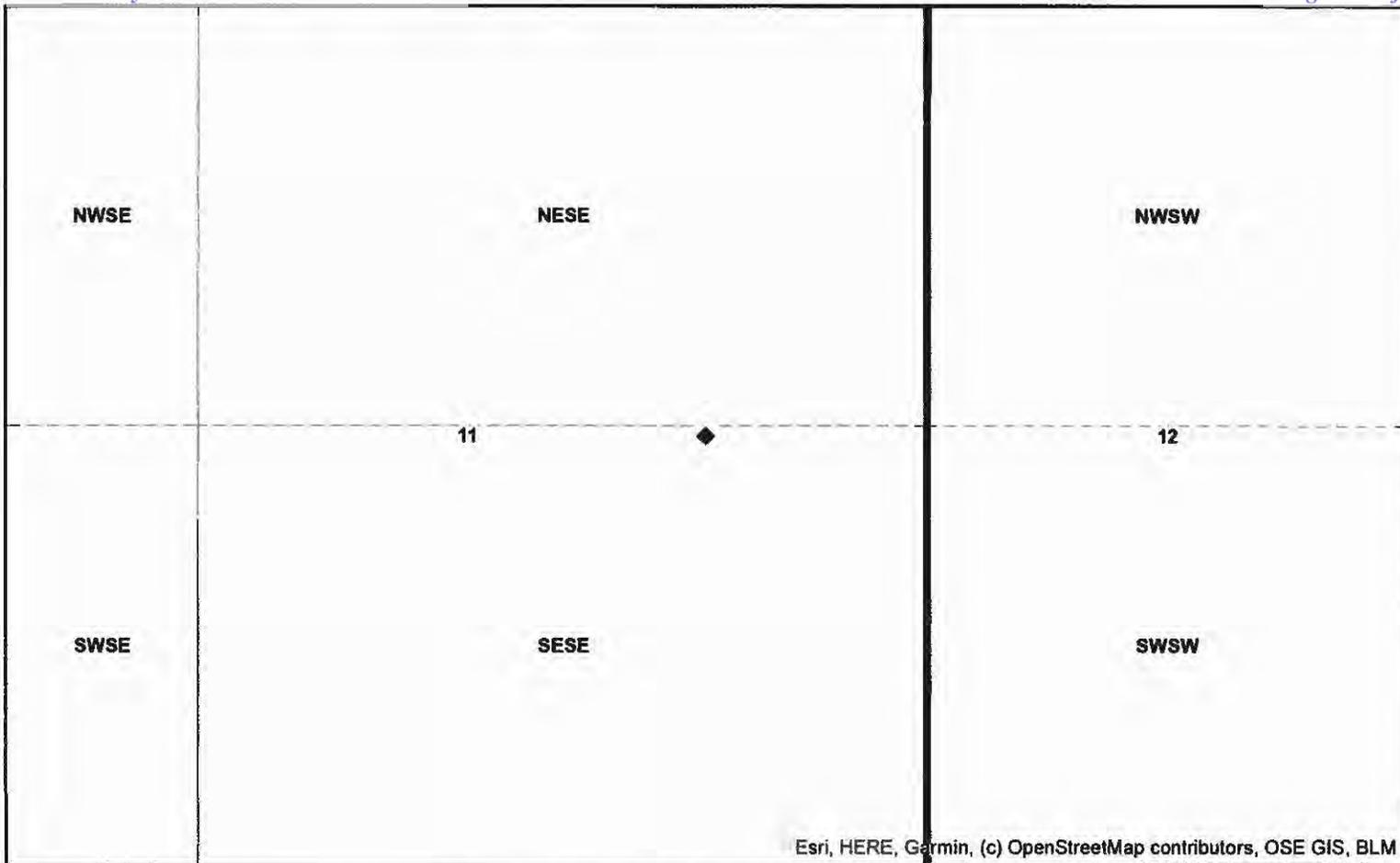
By: JUAN HERNANDEZ



Trn Desc: L 14648 POD1-4

File Number: L 14648

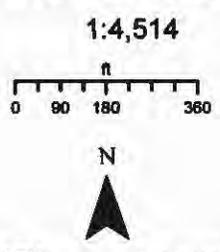
Trn Number: 671633



Esri, HERE, Garmin, (c) OpenStreetMap contributors, OSE GIS, BLM

**Coordinates**  
Decimal Degrees  
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 Longitude -103.317770  
State Plane - NAD 83 (f) - Zone E  
 Easting 854147.832  
 Northing 577701.386  
Degrees Minutes Seconds  
 Latitude 32 : 35 : 2.601600  
 Longitude -103 : 19 : 3.972000  
 Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER



GUILLEN 4/21/2020



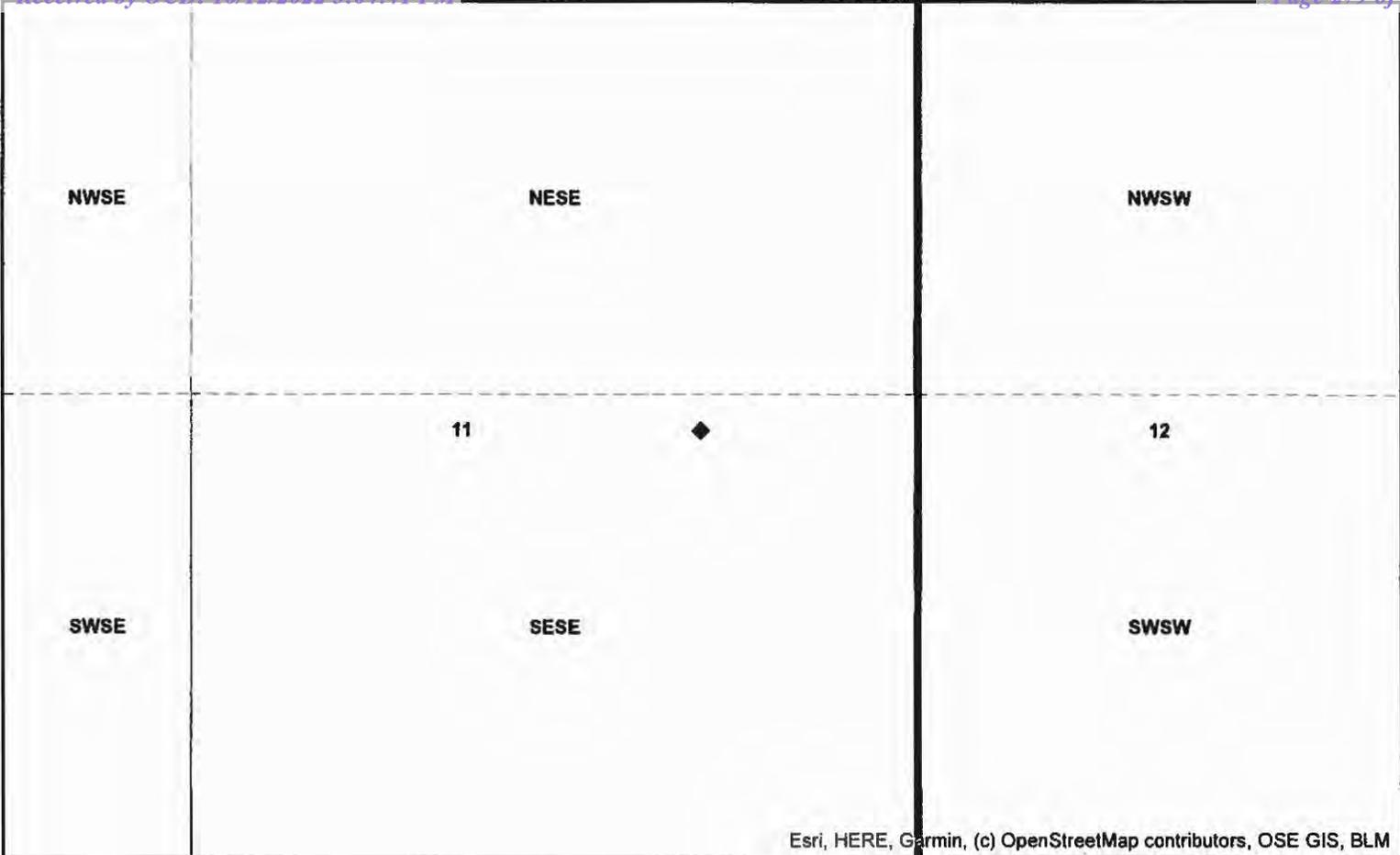
If you receive a file from the Office of the State Engineer, you are notified that the information is provided for informational purposes only. It is not intended to be used for any other purpose. The information is provided as is and is not guaranteed. The information is provided for informational purposes only. It is not intended to be used for any other purpose. The information is provided as is and is not guaranteed.

**Spatial Information**  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:L  
 Land Grant:  
 Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NWNESESE Qtr of Sec 11 of 020S 036E  
 Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

**Parcel Information**  
 UPC/DocNum: 4000412520001  
 Parcel Owner: KLEIN, FAYE FAMILY TRUST  
 Address:  
 Legal:

**POD Information**  
 Owner: OLLY ENERGY PARTNERSHIP  
 File Number: L-14648 POD1  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose: MON

- ◆ Coord Search Location
- Lea County Parcels 2018
- BLM Land Grant
- PLSSFirstDiv...
- - - PLSSSecond...

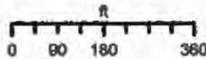


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**Coordinates**  
Decimal Degrees  
 Latitude 32.583926  
 Longitude -103.317748  
State Plane - NAD 83 (f) - Zone E  
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 Northing 577654.153  
Degrees Minutes Seconds  
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 Location pulled from Coordinate Search

NEW MEXICO OFFICE  
 OF THE  
 STATE ENGINEER

1:4,514



GUILLEN 4/21/2020



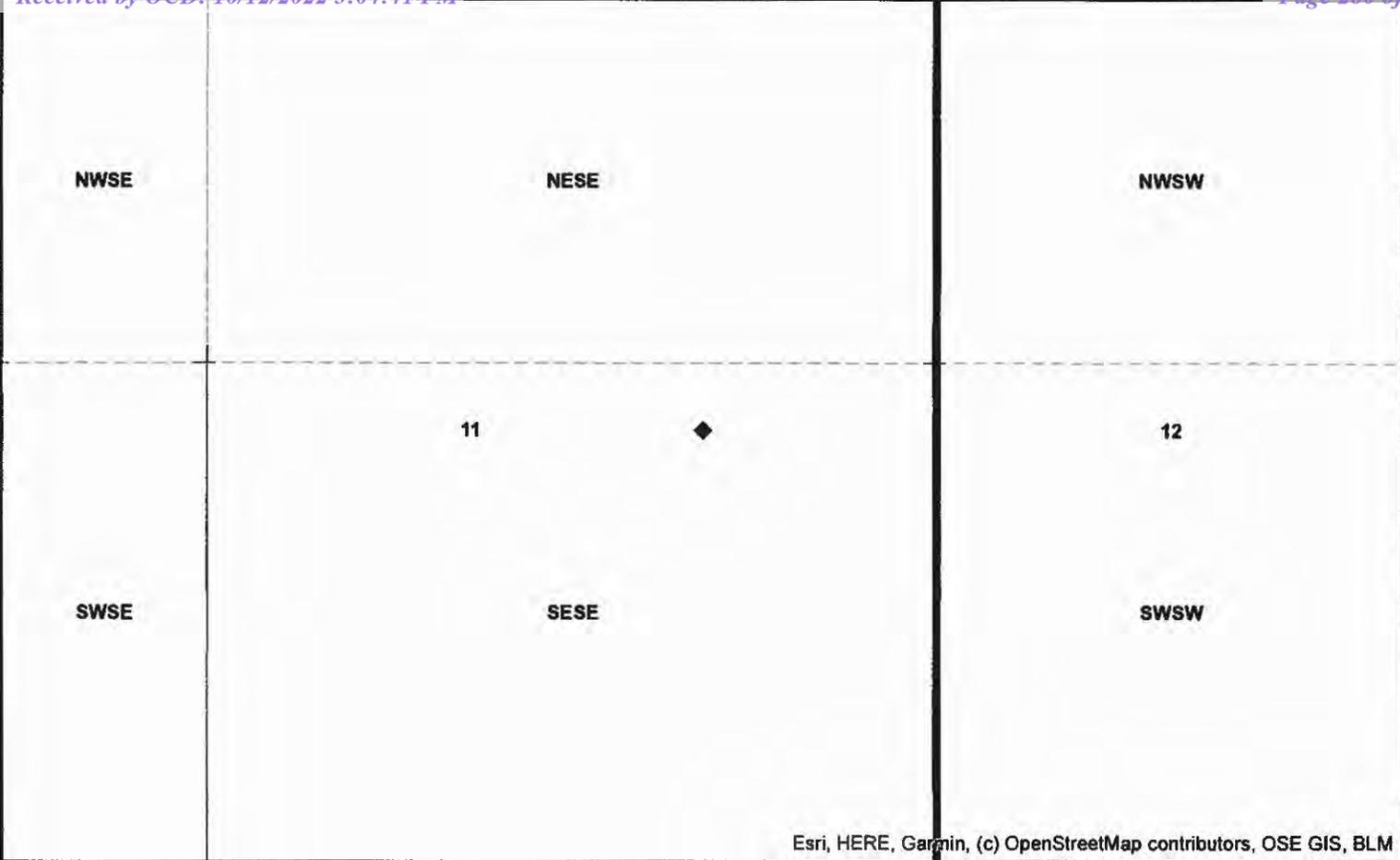
Please make all data have been reviewed by the New Mexico Office of the State Engineer (OSE) in order to be used in any way. The OSE does not warrant the accuracy of the data or the information provided. It is the user's responsibility to verify the accuracy of the data and the information provided. The OSE is not responsible for any errors or omissions in the data or the information provided. The OSE is not responsible for any damages or losses resulting from the use of the data or the information provided.

**Spatial Information**  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:L  
 Land Grant:  
 Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NWNESESE Qtr of Sec 11 of 020S 036E  
 Derived from CADNSDI- Qtr Sec. Locations are calculated and are only approximations

**Parcel Information**  
 UPC/DocNum: 4000412520001  
 Parcel Owner: KLEIN, FAYE FAMILY TRUST  
 Address:  
 Legal:

**POD Information**  
 Owner: HOLLY ENERGY PARTNERSHIP  
 File Number: POD2  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose: MON

- ◆ Coord Search Location
- PLSSFirstDiv...
- Lea County Parcels 2018
- PLSSSecond...
- BLM Land Grant
- PLSSTownship

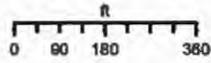


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**Coordinates**  
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 Longitude -103.317840  
State Plane - NAD 83 (f) - Zone E  
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 Northing 577599.673  
Degrees Minutes Seconds  
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 Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514



GUILLEN 4/21/2020



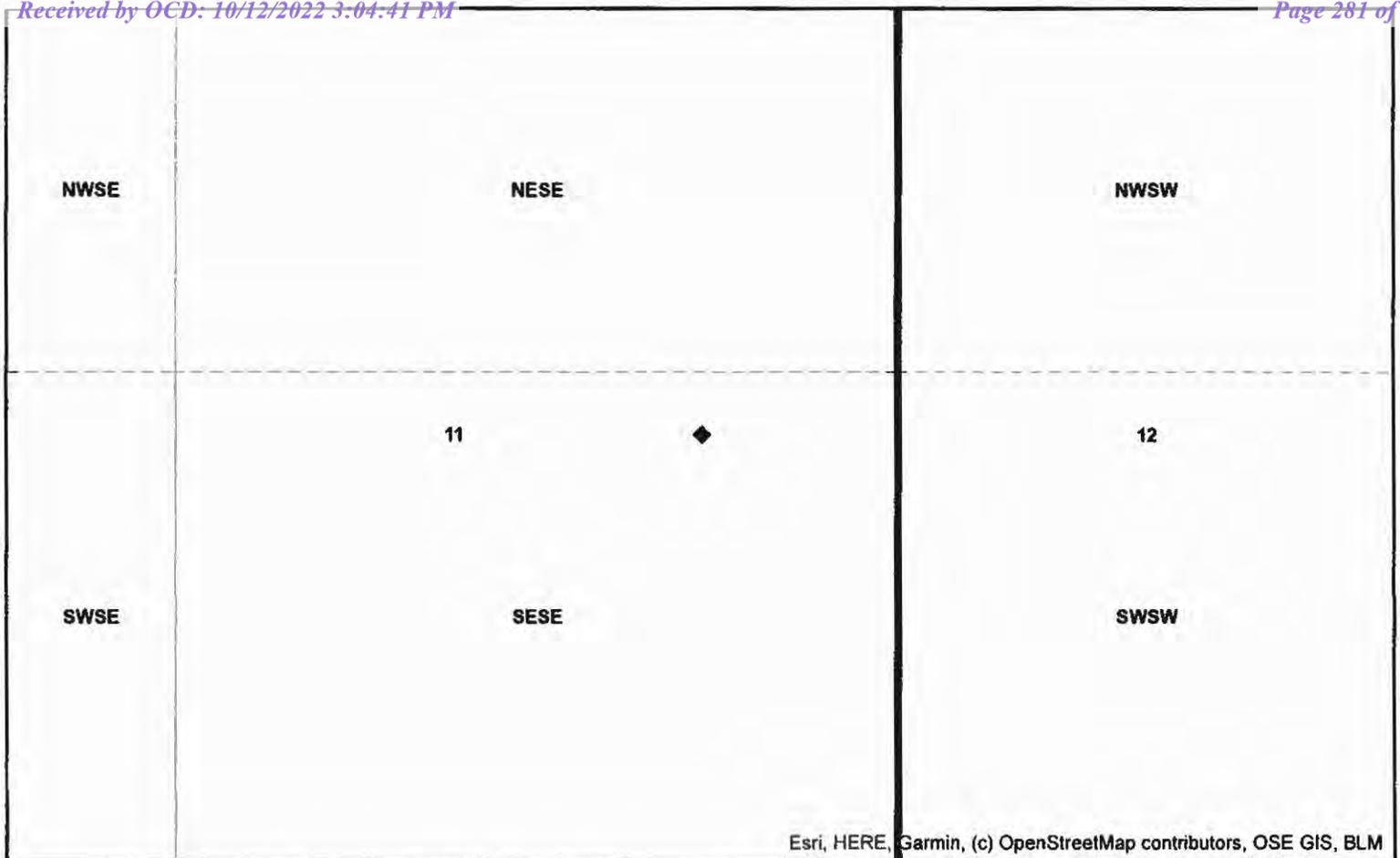
It is hereby certified that the above is a true and correct copy of the original as shown to the State Engineer (SE) in accordance with the provisions of the Interstate Stream Commission Act, N.M.S.A. 72-1-1, and that the same is a true and correct copy of the original as shown to the State Engineer (SE) in accordance with the provisions of the Interstate Stream Commission Act, N.M.S.A. 72-1-1, and that the same is a true and correct copy of the original as shown to the State Engineer (SE) in accordance with the provisions of the Interstate Stream Commission Act, N.M.S.A. 72-1-1.

**Spatial Information**  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:L  
 Land Grant:  
 Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
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**Parcel Information**  
 UPC/DocNum: 4000412520001  
 Parcel Owner: KLEIN, FAYE FAMILY TRUST  
 Address:  
 Legal:

**POD Information**  
 Owner: OLLY ENERGY PARTNERSHIP  
 File Number: POD3  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose: MON

- ◆ Coord Search Location
- Lea County Parcels 2018
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...
- PLSSSecond...

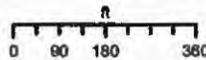


Esri, HERE, Garmin, (c) OpenStreetMap contributors, OSE GIS, BLM

**Coordinates**  
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 Longitude -103.317635  
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 Easting 854190.330  
 Northing 577606.097  
Degrees Minutes Seconds  
 Latitude 32 : 35 : 1.654800  
 Longitude -103 : 19 : 3.486000  
 Location pulled from Coordinate Search

NEW MEXICO OFFICE OF THE STATE ENGINEER

1:4,514



N



GUILLEN 4/21/2020



This product is provided as a service by the New Mexico Office of the State Engineer (OSE) (16-001). It is not a warranty and should not be used as a basis for any legal action. The user is responsible for their own actions and any damages or losses resulting from the use of this product. The user is responsible for their own actions and any damages or losses resulting from the use of this product. The user is responsible for their own actions and any damages or losses resulting from the use of this product.

**Spatial Information**  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:L  
 Land Grant:  
 Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NWNESESE Qtr of Sec 11 of 020S 036E  
 Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

**Parcel Information**  
 UPC/DocNum: 4000412520001  
 Parcel Owner: KLEIN, FAYE FAMILY TRUST  
 Address:  
 Legal:

**POD Information**  
 Owner: OLLY ENERGY PARTNERSHIP  
 File Number: L-14648 POD4  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose: MON

- Coord Search Location
- PLSSFirstDiv...
- Lea County Parcels 2018
- PLSSSecond...
- BLM Land Grant
- PLSSTownship

File No. \_\_\_\_\_

# NEW MEXICO OFFICE OF THE STATE ENGINEER



## WR-07 APPLICATION FOR PERMIT TO DRILL

### A WELL WITH NO WATER RIGHT

(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input checked="" type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

<input type="checkbox"/> Temporary Request - Requested Start Date: 10/04/2021	Requested End Date: 10/08/2021
---	--------------------------------

Plugging Plan of Operations Submitted?  Yes  No

#### 1. APPLICANT(S)

Name: Holly Energy Partners - Operating, L.P.	Name:
Contact or Agent: check here if Agent <input checked="" type="checkbox"/>	Contact or Agent: check here if Agent <input type="checkbox"/>
Richard Varnell	
Mailing Address: 505 East Huntland Drive, Ste. 250	Mailing Address:
City: Austin	City:
State: Texas Zip Code: 78752	State: Zip Code:
Phone: 512-297-3019 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell	Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell
Phone (Work):	Phone (Work):
E-mail (optional): rvarnell@trccompanies.com	E-mail (optional):

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No.:	Trn. No.:	Receipt No.:
Trans Description (optional):		
Sub-Basin:	PCW/LOG Due Date:	

2. WELL(S) Describe the well(s) applicable to this application.

**Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84). District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.**

NM State Plane (NAD83) (Feet)     
  UTM (NAD83) (Meters)     
  Lat/Long (WGS84) (to the nearest 1/10<sup>th</sup> of second)

NM West Zone     
  Zone 12N

NM East Zone     
  Zone 13N

NM Central Zone

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) (Quarters or Halves , Section, Township, Range) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
SB-29	-103.317266	32.584063	
SB-30	-103.317157	32.583925	

**NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)**  
 Additional well descriptions are attached:  Yes  No      If yes, how many \_\_\_\_\_

Other description relating well to common landmarks, streets, or other:  
 SITE IS LOCATED AT 32.584063, -103.317266 APPROXIMATELY 1 MILE WEST OF MADDUX ROAD (HIGHWAY 41)

Well is on land owned by:L&K RANCH, LLC

**Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached?**  Yes  No  
 If yes, how many \_\_\_\_\_

Approximate depth of well (feet): 35	Outside diameter of well casing (inches):N/A
Driller Name:TALON LPE	Driller License Number: WD-1800

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

SITE IS WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE SITE, NMOCD INCIDENT # NOY1822242858 LINKED TO WELL PERMIT APPLICATION L-14648

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.:	Trn No.:
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# WELL PLUGGING PLAN OF OPERATIONS



NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

Alert! Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology [geoinfo.nmt.edu/resources/water/egmn/](http://geoinfo.nmt.edu/resources/water/egmn/) if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email [nmbg-waterlevels@nmt.edu](mailto:nmbg-waterlevels@nmt.edu), prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

**I. FILING FEE:** There is no filing fee for this form.

**II. GENERAL / WELL OWNERSHIP:**  Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: SB-29  
Name of well owner: L&K RANCH, LLC  
Mailing address: 6800 W CARLSBAD County: LEA  
City: HOBBS State: NEW MEXICO Zip code: 88240  
Phone number: \_\_\_\_\_ E-mail: \_\_\_\_\_

**III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: JAROD MICHALSKY; TALON LPE, LTD  
New Mexico Well Driller License No.: WD-1800 Expiration Date: 08/17/2022

**IV. WELL INFORMATION:**  Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 35 min, 02.6 sec  
Longitude: 103 deg, 19 min, 02.2 sec, NAD 83

2) Reason(s) for plugging well(s):

SOIL BORING FOR SOIL SAMPLING

3) Was well used for any type of monitoring program? N/A If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s): \_\_\_\_\_

5) Static water level: UNKNOWN feet below land surface / feet above land surface (circle one)

6) Depth of the well: 35 feet

- 7) Inside diameter of innermost casing:     N/A     inches.
- 8) Casing material:     N/A
- 9) The well was constructed with:
  - an open-hole production interval, state the open interval: \_\_\_\_\_
  - a well screen or perforated pipe, state the screened interval(s): \_\_\_\_\_
- 10) What annular interval surrounding the artesian casing of this well is cement-grouted?     N/A
- 11) Was the well built with surface casing?     N/A     If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? \_\_\_\_\_ If yes, please describe:
- 12) Has all pumping equipment and associated piping been removed from the well?     N/A     If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

**V. DESCRIPTION OF PLANNED WELL PLUGGING:**  If plugging method differs between multiple wells on same site, a separate form must be completed for each method.

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

- 1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:
 

PRESSURE FILL BENTONITE GROUT VIA TREMMIE PIPE TO BOTTOM OF WELL SURFACE
- 2) Will well head be cut-off below land surface after plugging?     N/A

**VI. PLUGGING AND SEALING MATERIALS:**

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

- 1) For plugging intervals that employ cement grout, complete and attach Table A.
- 2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.
- 3) Theoretical volume of grout required to plug the well to land surface:     50-55 Gallons
- 4) Type of Cement proposed:     TYPE I/II PORTLAND CEMENT
- 5) Proposed cement grout mix:     7.5     gallons of water per 94 pound sack of Portland cement.
- 6) Will the grout be: \_\_\_\_\_ batch-mixed and delivered to the site  
    X     mixed on site

7) Grout additives requested, and percent by dry weight relative to cement:

6% BENTONITE

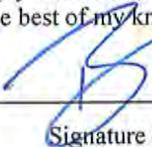
8) Additional notes and calculations:

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

[Empty box for additional information]

**VIII. SIGNATURE:**

I, Brent Eberhard, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.



\_\_\_\_\_

Signature of Applicant

9/17/2021

Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

- Approved subject to the attached conditions.
- Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

John R. D'Antonio Jr. P.E., New Mexico State Engineer

By: \_\_\_\_\_

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			
Bottom of proposed interval of grout placement (ft bgl)			
Theoretical volume of grout required per interval (gallons)			
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

**TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.**

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant or grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			



# WELL PLUGGING PLAN OF OPERATIONS



NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

**Alert!** Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology [geoinfo.nmt.edu/resources/water/egmn/](http://geoinfo.nmt.edu/resources/water/egmn/) if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email [nmbg-waterlevels@nmt.edu](mailto:nmbg-waterlevels@nmt.edu), prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

**I. FILING FEE:** There is no filing fee for this form.

**II. GENERAL / WELL OWNERSHIP:**  Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: SB-30

Name of well owner: L&K RANCH, LLC

Mailing address: 6800 W CARLSBAD County: LEA

City: HOBBS State: NEW MEXICO Zip code: 88240

Phone number: \_\_\_\_\_ E-mail: \_\_\_\_\_

**III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: JAROD MICHALSKY; TALON LPE, LTD

New Mexico Well Driller License No.: WD-1800 Expiration Date: 08/17/2022

**IV. WELL INFORMATION:**  Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 35 min, 02.1 sec  
Longitude: 103 deg, 19 min, 01.8 sec, NAD 83

2) Reason(s) for plugging well(s):  

SOIL BORING FOR SOIL SAMPLING

3) Was well used for any type of monitoring program? N/A If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s):

5) Static water level: UNKNOWN feet below land surface / feet above land surface (circle one)

6) Depth of the well: 35 feet

- 7) Inside diameter of innermost casing:       N/A       inches.
- 8) Casing material:       N/A
- 9) The well was constructed with:
  - an open-hole production interval, state the open interval: \_\_\_\_\_
  - a well screen or perforated pipe, state the screened interval(s): \_\_\_\_\_
- 10) What annular interval surrounding the artesian casing of this well is cement-grouted?       N/A
- 11) Was the well built with surface casing?       N/A       If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? \_\_\_\_\_ If yes, please describe:
- 12) Has all pumping equipment and associated piping been removed from the well?       N/A       If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

**V. DESCRIPTION OF PLANNED WELL PLUGGING:**  If plugging method differs between multiple wells on same site, a separate form must be completed for each method.

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

- 1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:  

PRESSURE FILL BENTONITE GROUT VIA TREMMIE PIPE TO BOTTOM OF WELL SURFACE
- 2) Will well head be cut-off below land surface after plugging?       N/A

**VI. PLUGGING AND SEALING MATERIALS:**

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

- 1) For plugging intervals that employ cement grout, complete and attach Table A.
- 2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.
- 3) Theoretical volume of grout required to plug the well to land surface:       50-55 Gallons
- 4) Type of Cement proposed:       TYPE I/II PORTLAND CEMENT
- 5) Proposed cement grout mix:       7.5       gallons of water per 94 pound sack of Portland cement.
- 6) Will the grout be: \_\_\_\_\_ batch-mixed and delivered to the site  
      X       mixed on site

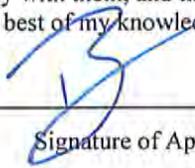
7) Grout additives requested, and percent by dry weight relative to cement:  
6% BENTONITE

8) Additional notes and calculations:

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

**VIII. SIGNATURE:**

I, Brent Eberhard, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

  
\_\_\_\_\_  
Signature of Applicant

09/17/2021  
\_\_\_\_\_  
Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

- Approved subject to the attached conditions.
- Not approved for the reasons provided on the attached letter.

Witness my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

John R. D'Antonio Jr. P.E., New Mexico State Engineer

By: \_\_\_\_\_

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			
Bottom of proposed interval of grout placement (ft bgl)			
Theoretical volume of grout required per interval (gallons)			
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

**TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.**

	<b>Interval 1 – deepest</b>	<b>Interval 2</b>	<b>Interval 3 – most shallow</b>
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant or grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

John R. D Antonio, Jr., P.E.  
State Engineer



Roswell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

**STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 708534  
File Nbr: L 14648 POD6,7

Sep. 27, 2021

RICHARD VARNELL  
HOLLY ENERGY PARTNERS OP LP  
505 EAST HUNTLAND DRIVE  
SUITE 250  
AUSTIN, TX 78752

Greetings:

Your approved copy of the above numbered permit to drill a well for non-consumptive purposes is enclosed. You must obtain an additional permit if you intend to use the water. It is your responsibility to provide the contracted well driller with a copy of the permit that must be made available during well drilling activities.

Carefully review the attached conditions of approval for all specific permit requirements.

- \* If use of this well is temporary in nature and the well will be plugged at the end of the well usage, the OSE must initially approve of the plugging. If plugging approval is not conditioned in this permit, the applicant must submit a Plugging Plan of Operations for approval prior to the well being plugged. The Plugging Record must be properly completed and submitted to the OSE within 30 days of the well plugging.
- \* If the final intended purpose and condition requires a well ID tag and meter installation, the applicant must immediately send a completed meter report form to this office.
- \* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole.
- \* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website [www.ose.state.nm.us](http://www.ose.state.nm.us).

Sincerely,

*for*   
KASHYAP PAREKH  
(575) 622-6521

Enclosure

explore

File No. **L-14648 POD6,7**

NEW MEXICO OFFICE OF THE STATE ENGINEER



WR-07 APPLICATION FOR PERMIT TO DRILL  
A WELL WITH NO WATER RIGHT



(check applicable box):

For fees, see State Engineer website: <http://www.ose.state.nm.us/>

Purpose:	<input type="checkbox"/> Pollution Control And/Or Recovery	<input type="checkbox"/> Ground Source Heat Pump
<input checked="" type="checkbox"/> Exploratory Well (Pump test)	<input type="checkbox"/> Construction Site/Public Works Dewatering	<input type="checkbox"/> Other(Describe):
<input type="checkbox"/> Monitoring Well	<input type="checkbox"/> Mine Dewatering	

A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.

Temporary Request - Requested Start Date: 10/04/2021 Requested End Date: 10/08/2021

Plugging Plan of Operations Submitted?  Yes  No

1. APPLICANT(S)

Name: Holly Energy Partners - Operating, L.P.	Name:
Contact or Agent: check here if Agent <input checked="" type="checkbox"/> Richard Varnell	Contact or Agent: check here if Agent <input type="checkbox"/>
Mailing Address: 505 East Huntland Drive, Ste. 250	Mailing Address:
City: Austin	City:
State: Texas Zip Code: 78752	State: Zip Code:
Phone: 512-297-3019 <input type="checkbox"/> Home <input checked="" type="checkbox"/> Cell	Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell
Phone (Work):	Phone (Work):
E-mail (optional): rvarnell@trccompanies.com	E-mail (optional):

OSE DTI SEP 23 2021 09:11:46

FOR OSE INTERNAL USE

Application for Permit, Form WR-07, Rev 11/17/16

File No.: <b>L-14648</b>	Trn. No.: <b>708534</b>	Receipt No.: <b>2-43826</b>
Trans Description (optional): <b>POD6,7</b>		
Sub-Basin: <b>L</b>	PCW/LOG Due Date: <b>9.27.22</b>	

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), or Latitude/Longitude (Lat/Long - WGS84).  
 District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.

NM State Plane (NAD83) (Feet)       UTM (NAD83) (Meters)       Lat/Long (WGS84) (to the nearest 1/10<sup>th</sup> of second)  
 NM West Zone       Zone 12N  
 NM East Zone       Zone 13N  
 NM Central Zone

Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) {Quarters or Halves, Section, Township, Range} OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name
L-14648 SB-29 POD 4	-103.317266	32.584063	
L-14648 SB-30 POD 7	-103.317157	32.583925	

**NOTE: If more well locations need to be described, complete form WR-08 (Attachment 1 – POD Descriptions)**  
 Additional well descriptions are attached:  Yes  No      If yes, how many \_\_\_\_\_

Other description relating well to common landmarks, streets, or other:  
 SITE IS LOCATED AT 32.584063, -103.317266 APPROXIMATELY 1 MILE WEST OF MADDOX ROAD (HIGHWAY 41)

Well is on land owned by: L&K RANCH, LLC

Well Information: **NOTE: If more than one (1) well needs to be described, provide attachment.** Attached?  Yes  No  
 If yes, how many \_\_\_\_\_

Approximate depth of well (feet): 35      Outside diameter of well casing (inches): N/A

Driller Name: TALON LPE      Driller License Number: WD-1800

3. ADDITIONAL STATEMENTS OR EXPLANATIONS

SITE IS WTX TO EMSU BATTERY TO BYRD PUMP CRUDE OIL RELEASE SITE, NMOCDC INCIDENT # NOY1822242858 LINKED TO WELL PERMIT APPLICATION L-14648

OSE DTI SEP 23 2021 AM 11:46

FOR OSE INTERNAL USE      Application for Permit, Form WR-07

File No.: L-14648      Trn No.: 706534

**4. SPECIFIC REQUIREMENTS:** The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

<p><b>Exploratory:</b>  <input checked="" type="checkbox"/> Include a description of any proposed pump test, if applicable.</p>	<p><b>Pollution Control and/or Recovery:</b>  <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:  <input type="checkbox"/> A description of the need for the pollution control or recovery operation.  <input type="checkbox"/> The estimated maximum period of time for completion of the operation.  <input type="checkbox"/> The annual diversion amount.  <input type="checkbox"/> The annual consumptive use amount.  <input type="checkbox"/> The maximum amount of water to be diverted and injected for the duration of the operation.  <input type="checkbox"/> The method and place of discharge.  <input type="checkbox"/> The method of measurement of water produced and discharged.</p>	<p><b>Construction De-Watering:</b>  <input type="checkbox"/> Include a description of the proposed dewatering operation,  <input type="checkbox"/> The estimated duration of the operation,  <input type="checkbox"/> The maximum amount of water to be diverted,  <input type="checkbox"/> A description of the need for the dewatering operation, and,  <input type="checkbox"/> A description of how the diverted water will be disposed of.</p>	<p><b>Mine De-Watering:</b>  <input type="checkbox"/> Include a plan for pollution control/recovery, that includes the following:  <input type="checkbox"/> A description of the need for mine dewatering.  <input type="checkbox"/> The estimated maximum period of time for completion of the operation.  <input type="checkbox"/> The source(s) of the water to be diverted.  <input type="checkbox"/> The geohydrologic characteristics of the aquifer(s).  <input type="checkbox"/> The maximum amount of water to be diverted per annum.  <input type="checkbox"/> The maximum amount of water to be diverted for the duration of the operation.  <input type="checkbox"/> The quality of the water.  <input type="checkbox"/> The method of measurement of water diverted.</p>
<p><b>Monitoring:</b>  <input type="checkbox"/> Include the reason for the monitoring well, and,  <input type="checkbox"/> The duration of the planned monitoring.</p>	<p><input type="checkbox"/> The source of water to be injected.  <input type="checkbox"/> The method of measurement of water injected.  <input type="checkbox"/> The characteristics of the aquifer.  <input type="checkbox"/> The method of determining the resulting annual consumptive use of water and depletion from any related stream system.  <input type="checkbox"/> Proof of any permit required from the New Mexico Environment Department.  <input type="checkbox"/> An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.</p>	<p><b>Ground Source Heat Pump:</b>  <input type="checkbox"/> Include a description of the geothermal heat exchange project,  <input type="checkbox"/> The number of boreholes for the completed project and required depths.  <input type="checkbox"/> The time frame for constructing the geothermal heat exchange project, and,  <input type="checkbox"/> The duration of the project.  <input type="checkbox"/> Preliminary surveys, design data, and additional information shall be included to provide all essential facts relating to the request.</p>	<p><input type="checkbox"/> The recharge of water to the aquifer.  <input type="checkbox"/> Description of the estimated area of hydrologic effect of the project.  <input type="checkbox"/> The method and place of discharge.  <input type="checkbox"/> An estimation of the effects on surface water rights and underground water rights from the mine dewatering project.  <input type="checkbox"/> A description of the methods employed to estimate effects on surface water rights and underground water rights.  <input type="checkbox"/> Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.</p>

**ACKNOWLEDGEMENT**

I, We (name of applicant(s)), Richard Varnell  
 Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Richard Varnell  
 Applicant Signature

\_\_\_\_\_  
 Applicant Signature

**ACTION OF THE STATE ENGINEER**

This application is:

approved       partially approved       denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the attached conditions of approval.

Witness my hand and seal this 27 day of September 20 21, for the State Engineer,

John R. D'Antonio, Jr., P.E., State Engineer

By: K. Parekh  
 Signature

\_\_\_\_\_  
 Print

Title: Kashyap Parekh, Water Resources Professional III  
 Print

FOR OSE INTERNAL USE

Application for Permit, Form WR-07

File No.: <u>L-14648</u>	Trm No.: <u>708534</u>
--------------------------	------------------------

**NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE**

**SPECIFIC CONDITIONS OF APPROVAL**

- 17-16 Construction of a water well by anyone without a valid New Mexico Well Driller License is illegal, and the landowner shall bear the cost of plugging the well by a licensed New Mexico well driller. This does not apply to driven wells, the casing of which does not exceed two and three-eighths inches outside diameter.
- 17-1B Depth of the well shall not exceed the thickness of the Ogallala formation.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging.

Trn Desc: L 14648 POD6,7

File Number: L 14648

Trn Number: 708534

NEW MEXICO STATE ENGINEER OFFICE  
PERMIT TO EXPLORE

SPECIFIC CONDITIONS OF APPROVAL (Continued)

- LOG The Point of Diversion L 14648 POD6 must be completed and the Well Log filed on or before 09/27/2022.
- LOG The Point of Diversion L 14648 POD7 must be completed and the Well Log filed on or before 09/27/2022.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

SHOULD THE PERMITTEE CHANGE THE PURPOSE OF USE TO OTHER THAN EXPLORATORY PURPOSES, AN APPLICATION SHALL BE ACQUIRED FROM THE OFFICE OF THE STATE ENGINEER.

ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	Date Rcvd. Corrected:
Formal Application Rcvd: 09/23/2021	Pub. of Notice Ordered:
Date Returned - Correction:	Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

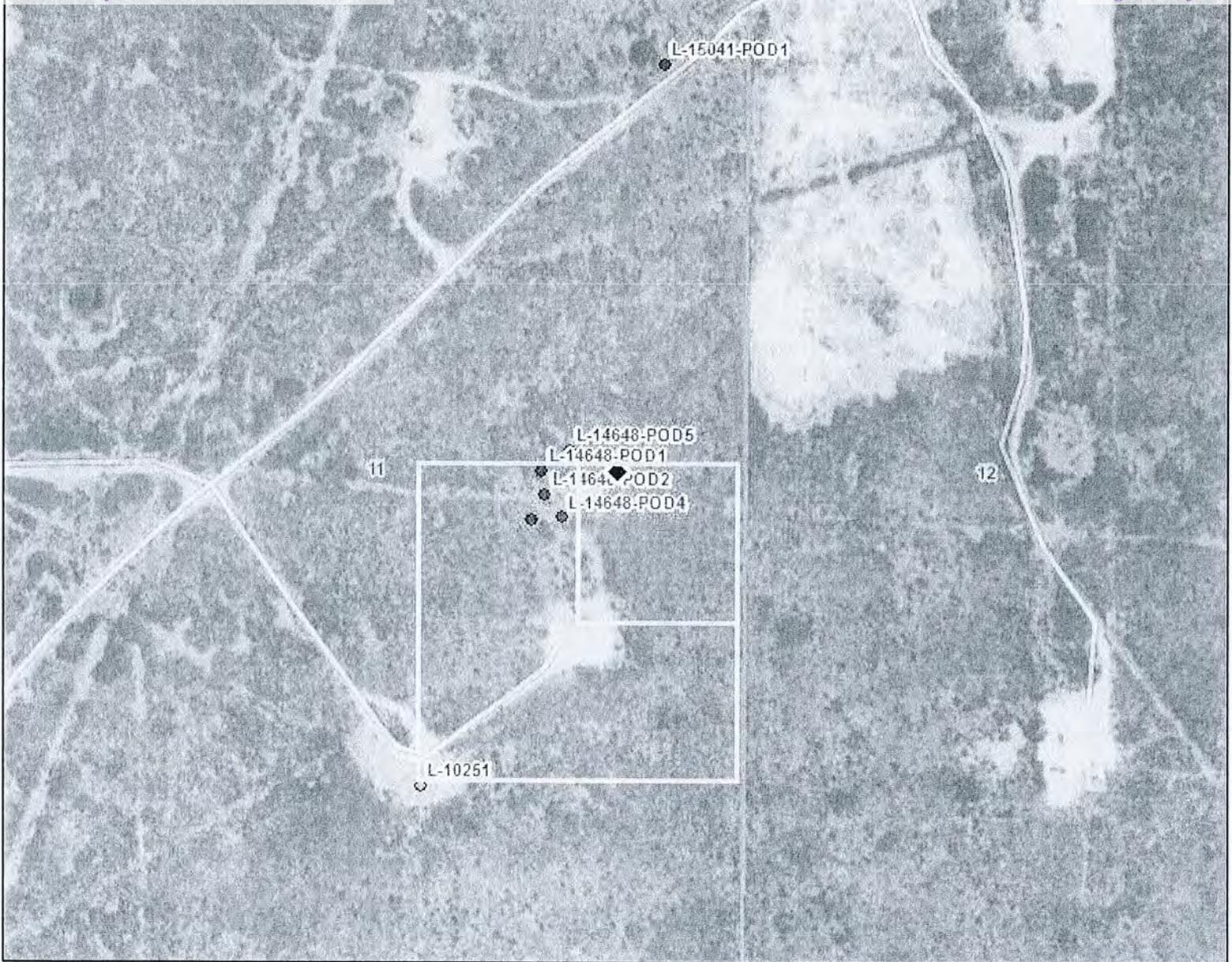
Witness my hand and seal this 27 day of Sep A.D., 2021

John R. D Antonio, Jr., P.E. , State Engineer

By: K. Parekh  
KASHYAP PAREKH

Trn Desc: L 14648 POD6,7

File Number: L 14648  
Trn Number: 708534



**Coordinates**  
UTM - NAD 83 (m) - Zone 13  
 Easting 657937.891  
 Northing 3606426.295  
State Plane - NAD 83 (f) - Zone E  
 Easting 854303.054  
 Northing 577705.415  
Degrees Minutes Seconds  
 Latitude 32 : 35 : 2.626800  
 Longitude -103 : 19 : 2.157600  
 Location pulled from Coordinate Search

NEW MEXICO OFFICE  
 OF THE  
 STATE ENGINEER

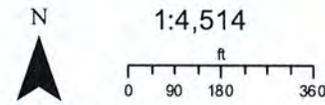


Image Info  
 Source: Maxar  
 Date: 9/25/2020  
 Resolution (m):0.5  
 Accuracy (m): 5

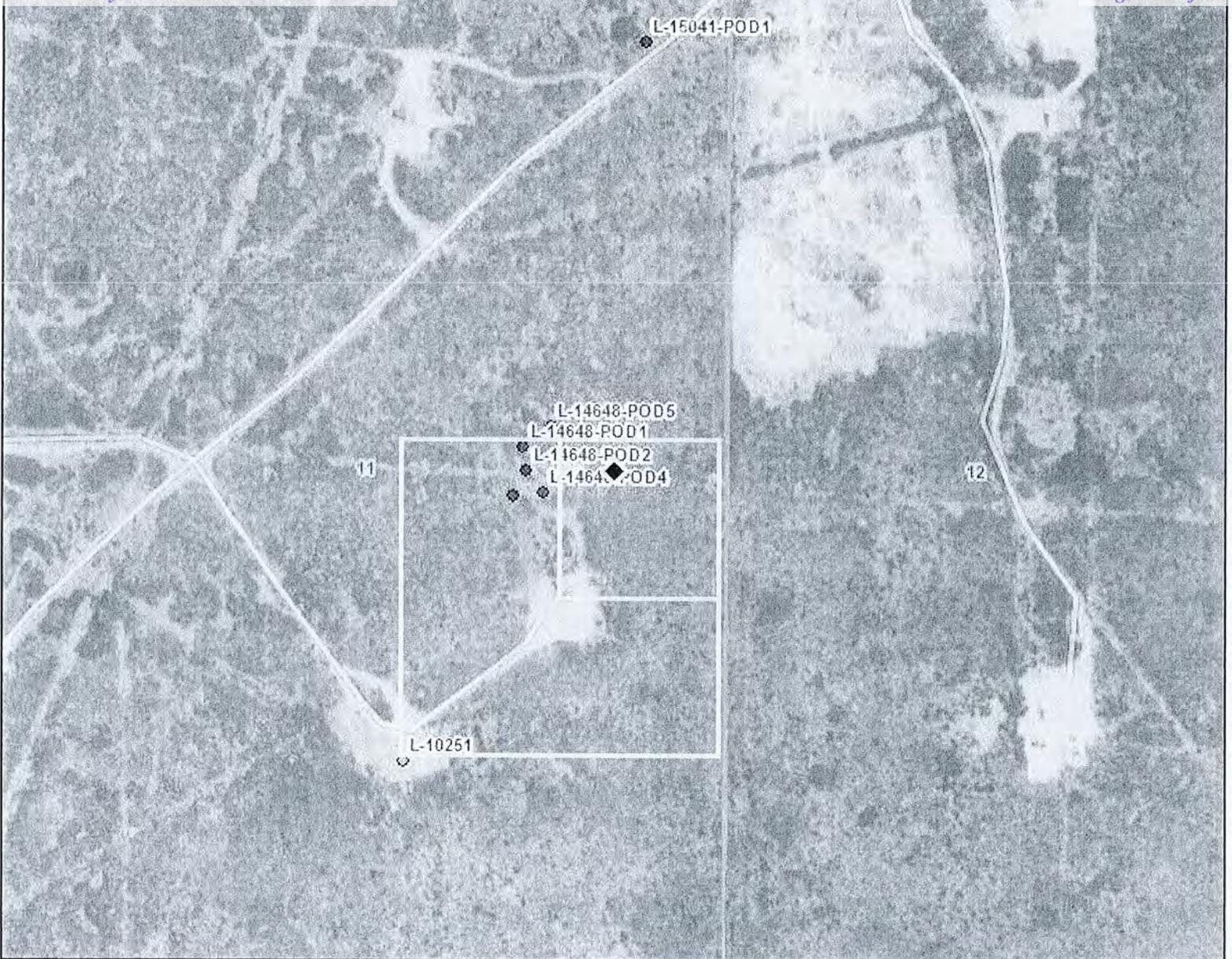
**Spatial Information**  
 OSE Administrative Area: Lea  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:Lea County  
 Sub-Basin: Landreth-Monumnet Draws  
 Land Grant: Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NENESESE Qtr of Sec 11 of 020S 036E

- |                         |                                       |                                     |
|-------------------------|---------------------------------------|-------------------------------------|
| Calculated PLSS         | <b>Water Right Regulations</b>        | <b>New Mexico State Trust Lands</b> |
| ◆ Coord Search Location | Critical Management Area - Guidelines | Subsurface Estate                   |
| <b>GIS WATERS PODs</b>  | Closure Area                          | Surface Estate                      |
| ○ Unknown               | OSE District Boundary                 | Both Estates                        |
| ● Active                |                                       | Site Boundaries                     |
| ○ Pending               |                                       | Sections                            |

**POD Information**  
 Owner:  
 File Number: L-14648 POD 6  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose:

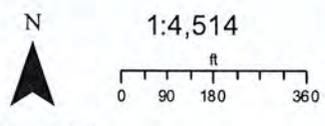
9/27/20

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**Coordinates**  
UTM - NAD 83 (m) - Zone 13  
 Easting 657948.365  
 Northing 3606411.156  
State Plane - NAD 83 (f) - Zone E  
 Easting 854337.108  
 Northing 577655.528  
Degrees Minutes Seconds  
 Latitude 32 : 35 : 2.130000  
 Longitude -103 : 19 : 1.765200  
 Location pulled from Coordinate Search

NEW MEXICO OFFICE  
 OF THE  
 STATE ENGINEER



**Image Info**  
 Source: Maxar  
 Date: 9/25/2020  
 Resolution (m):0.5  
 Accuracy (m): 5

**Spatial Information**  
 OSE Administrative Area: Lea  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area:Lea County  
 Sub-Basin: Landreth-Monumnet Draws  
 Land Grant: Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NENESESE Qtr of Sec 11 of 020S 036E

- Calculated PLSS**
- ◆ Coord Search Location
  - Unknown
  - Active
  - Pending
- Water Right Regulations**
- Critical Management Area - Guidelines
  - Closure Area
  - OSE District Boundary
- GIS WATERS PODs**

- New Mexico State Trust Lands**
- Subsurface Estate
  - Surface Estate
  - Both Estates
  - Site Boundaries
  - Sections

**POD Information**  
 Owner:  
 File Number: L-14648POD7  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose:

9/27/20

Revised 08/2018. All maps produced by the New Mexico Office of the State Engineer are for informational purposes only. They are not to be used for legal or other purposes. The Office of the State Engineer is not responsible for any errors or omissions in this document. The Office of the State Engineer is not responsible for any damages or liabilities arising from the use of this document. The Office of the State Engineer is not responsible for any damages or liabilities arising from the use of this document.

OFFICE OF THE STATE ENGINEER/INTERSTATE STREAM COMMISSION – ROSWELL OFFICE

OFFICIAL RECEIPT NUMBER: 2 - 43826 DATE: 9-23-21 FILE NO.: NEW
TOTAL: Talon/2PK RECEIVED: Talon CHECK NO.: 15145 CASH:
PAYOR: Talon/2PK ADDRESS: 9217 Buena St CITY: Amarillo STATE: TX
ZIP: 79107 RECEIVED BY: gmc

INSTRUCTIONS: Indicate the number of actions to the left of the appropriate type of filing. Complete the receipt information. Original to payor; pink copy to Program Support/ASD; and yellow copy for Water Rights. If a mistake is made, void the original and all copies and submit to Program Support/ASD as part of your daily deposit.

Table with columns for Fee Category (A-G), Description, Amount, and Payment Method. Includes sections for Ground Water Filing Fees, Surface Water Filing Fees, Well Driller Fees, Reproduction of Documents, Certification, and Other.

All fees are non-refundable.



**STATE OF NEW MEXICO**  
OFFICE OF THE STATE ENGINEER  
ROSWELL

**John R. D'Antonio Jr., P.E.**  
State Engineer

**DISTRICT II**  
1900 West Second St.  
Roswell, New Mexico 88201  
Phone: (575) 622-6521  
Fax: (575) 623-8559

September 27, 2021

L & K Ranch LLC  
6800 W. Carlsbad  
Hobbs, New Mexico 88240

RE: Well Plugging Plan of Operations for **L-14648-POD6 and L-14648-POD7**

Greetings:

Enclosed is your copy of the Well Plugging Plan of Operations for the above referenced project. The proposed method of operation is found to be acceptable and in accordance with the Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells 19.27.4 NMAC adopted June 30, 2017 by the State Engineer.

*Plugging operations shall also be conducted in accordance with NMED, NMOCD, or other State or Federal agencies having oversight for the above described project.*

Within 30 days after the well is plugged, the well driller is required to file a complete plugging record with the OSE and the permit holder.

Sincerely,

A handwritten signature in black ink that reads "K. Parekh".

Kashyap Parekh  
Water Resources Professional III



# WELL PLUGGING PLAN OF OPERATIONS



NOTE: A Well Plugging Plan of Operations shall be filed with and accepted by the Office of the State Engineer prior to plugging. This form may be used to plug a single well, or if you are plugging multiple monitoring wells on the same site using the same plugging methodology.

**Alert!** Your well may be eligible to participate in the Aquifer Mapping Program (AMP)-NM Bureau of Geology [geoinfo.nmt.edu/resources/water/cgmn/](http://geoinfo.nmt.edu/resources/water/cgmn/) if within an area of interest and meets the minimum construction requirements, such as there is still water in your well, and the well construction reflected in a well record and log is not compromised, contact AMP at 575-835-5038 or -6951, or by email [nmbg-waterlevels@nmt.edu](mailto:nmbg-waterlevels@nmt.edu), prior to completing this prior form. Showing proof to the OSE that your well was accepted in this program, may delay the plugging of your well until a later date.

**I. FILING FEE:** There is no filing fee for this form.

**II. GENERAL / WELL OWNERSHIP:**  Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: ~~SB-29~~ L-14648-POD6  
Name of well owner: L&K RANCH, LLC  
Mailing address: 6800 W CARLSBAD County: LEA  
City: HOBBS State: NEW MEXICO Zip code: 88240  
Phone number: \_\_\_\_\_ E-mail: \_\_\_\_\_

**III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: JAROD MICHALSKY; TALON LPE, LTD  
New Mexico Well Driller License No.: WD-1800 Expiration Date: 08/17/2022

**IV. WELL INFORMATION:**  Check here if this plan describes method for plugging multiple monitoring wells on the same site and attach supplemental form WD-08m and skip to #2 in this section.

Note: A copy of the existing Well Record for the well(s) to be plugged should be attached to this plan.

1) GPS Well Location: Latitude: 32 deg, 35 min, 02.6 sec  
Longitude: 103 deg, 19 min, 02.2 sec, NAD 83

2) Reason(s) for plugging well(s):

SOIL BORING FOR SOIL SAMPLING

3) Was well used for any type of monitoring program? N/A If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s): \_\_\_\_\_

5) Static water level: UNKNOWN feet below land surface / feet above land surface (circle one)

6) Depth of the well: 35 feet

- 7) Inside diameter of innermost casing:       N/A       inches.
- 8) Casing material:       N/A
- 9) The well was constructed with:
  - an open-hole production interval, state the open interval: \_\_\_\_\_
  - a well screen or perforated pipe, state the screened interval(s): \_\_\_\_\_
- 10) What annular interval surrounding the artesian casing of this well is cement-grouted?       N/A
- 11) Was the well built with surface casing?       N/A       If yes, is the annulus surrounding the surface casing grouted or otherwise sealed? \_\_\_\_\_ If yes, please describe:
- 12) Has all pumping equipment and associated piping been removed from the well?       N/A       If not, describe remaining equipment and intentions to remove prior to plugging in Section VII of this form.

**V. DESCRIPTION OF PLANNED WELL PLUGGING:**  If plugging method differs between multiple wells on same site, a separate form must be completed for each method.

Note: If this plan proposes to plug an artesian well in a way other than with cement grout, placed bottom to top with a tremie pipe, a detailed diagram of the well showing proposed final plugged configuration shall be attached, as well as any additional technical information, such as geophysical logs, that are necessary to adequately describe the proposal. Attach a copy of any signed OSE variance to this plugging plan.

Also, if this planned plugging plan requires a variance to 19.27.4 NMAC, attach a detailed variance request signed by the applicant.

- 1) Describe the method by which cement grout shall be placed in the well, or describe requested plugging methodology proposed for the well:  

PRESSURE FILL BENTONITE GROUT VIA TREMMIE PIPE TO BOTTOM OF WELL SURFACE
- 2) Will well head be cut-off below land surface after plugging?       N/A

**VI. PLUGGING AND SEALING MATERIALS:**

Note: The plugging of a well that taps poor quality water may require the use of a specialty cement or specialty sealant. Attach a copy of the batch mix recipe from the cement company and/or product description for specialty cement mixes or any sealant that deviates from the list of OSE approved sealants.

- 1) For plugging intervals that employ cement grout, complete and attach Table A.
- 2) For plugging intervals that will employ approved non-cement based sealant(s), complete and attach Table B.
- 3) Theoretical volume of grout required to plug the well to land surface:       50-55 Gallons
- 4) Type of Cement proposed:       TYPE I/II PORTLAND CEMENT
- 5) Proposed cement grout mix:       7.5       gallons of water per 94 pound sack of Portland cement.
- 6) Will the grout be:        batch-mixed and delivered to the site  
      X       mixed on site

OSE DTW SEP 23 2021 AM 11:47

7) Grout additives requested, and percent by dry weight relative to cement:

6% BENTONITE

8) Additional notes and calculations:

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

[Empty box for additional information]

**VIII. SIGNATURE:**

I, Brent Eberhard, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

[Signature]  
Signature of Applicant

9/17/2021  
Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

- Approved subject to the attached conditions.
- Not approved for the reasons provided on the attached letter.

OSE 017 SEP 23 2021 11:47

Witness my hand and official seal this 27<sup>th</sup> day of SEPTEMBER 2021

John R. D'Antonio Jr. P.E., New Mexico State Engineer

By: K. Parekh  
KASHYAP PAREKH  
W.R.P. III



TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of grout placement (ft bgl)			
Bottom of proposed interval of grout placement (ft bgl)			
Theoretical volume of grout required per interval (gallons)			
Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
Grout additive 2 requested			
Additive 2 percent by dry weight relative to cement			

OSE DII SEP 23 2021 AM 11:47

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant or grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

DSE DIT SEP 23 2021 AM 11:47



**STATE OF NEW MEXICO**  
OFFICE OF THE STATE ENGINEER  
ROSWELL

**John R. D'Antonio Jr., P.E.**  
State Engineer

**DISTRICT II**  
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September 27, 2021

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Sincerely,

A handwritten signature in black ink that reads "K. Parekh".

Kashyap Parekh  
Water Resources Professional III



# WELL PLUGGING PLAN OF OPERATIONS



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**I. FILING FEE:** There is no filing fee for this form.

**II. GENERAL / WELL OWNERSHIP:**  Check here if proposing one plan for multiple monitoring wells on the same site and attaching WD-08m

Existing Office of the State Engineer POD Number (Well Number) for well to be plugged: SB-30 L-14648-POD 7

Name of well owner: L&K RANCH, LLC

Mailing address: 6800 W CARLSBAD County: LEA

City: HOBBS State: NEW MEXICO Zip code: 88240

Phone number: \_\_\_\_\_ E-mail: \_\_\_\_\_

**III. WELL DRILLER INFORMATION:**

Well Driller contracted to provide plugging services: JAROD MICHALSKY; TALON LPE, LTD

New Mexico Well Driller License No.: WD-1800 Expiration Date: 08/17/2022

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1) GPS Well Location: Latitude: 32 deg, 35 min, 02.1 sec  
Longitude: 103 deg, 19 min, 01.8 sec, NAD 83

2) Reason(s) for plugging well(s):

SOIL BORING FOR SOIL SAMPLING  
OSE DTJ SEP 23 2021 AM 11:48

3) Was well used for any type of monitoring program? N/A If yes, please use section VII of this form to detail what hydrogeologic parameters were monitored. If the well was used to monitor contaminated or poor quality water, authorization from the New Mexico Environment Department may be required prior to plugging.

4) Does the well tap brackish, saline, or otherwise poor quality water? N/A If yes, provide additional detail, including analytical results and/or laboratory report(s): \_\_\_\_\_

5) Static water level: UNKNOWN feet below land surface / feet above land surface (circle one)

6) Depth of the well: 35 feet

- 7) Inside diameter of innermost casing:   N/A   inches.
- 8) Casing material:   N/A
- 9) The well was constructed with:
  - an open-hole production interval, state the open interval: \_\_\_\_\_
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OSE DIV SEP 23 2021 AM 11:48

7) Grout additives requested, and percent by dry weight relative to cement:

6% BENTONITE

8) Additional notes and calculations:

**VII. ADDITIONAL INFORMATION:** List additional information below, or on separate sheet(s):

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**VIII. SIGNATURE:**

I, Brent Eberhard, say that I have carefully read the foregoing Well Plugging Plan of Operations and any attachments, which are a part hereof; that I am familiar with the rules and regulations of the State Engineer pertaining to the plugging of wells and will comply with them, and that each and all of the statements in the Well Plugging Plan of Operations and attachments are true to the best of my knowledge and belief.

[Signature]  
Signature of Applicant

09/17/2021  
Date

**IX. ACTION OF THE STATE ENGINEER:**

This Well Plugging Plan of Operations is:

- Approved subject to the attached conditions.
- Not approved for the reasons provided on the attached letter.

OGE OUT SEP 23 2021 09:11:43

Witness my hand and official seal this 27<sup>th</sup> day of SEPTEMBER, 2021



John R. D'Antonio Jr. P.E., New Mexico State Engineer

By: K. Parekh  
KASHYAP PAREKH  
W.R.P. III

TABLE A - For plugging intervals that employ cement grout. Start with deepest interval.

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Proposed cement grout mix gallons of water per 94-lb. sack of Portland cement			
Mixed on-site or batch-mixed and delivered?			
Grout additive 1 requested			
Additive 1 percent by dry weight relative to cement			
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Additive 2 percent by dry weight relative to cement			

OSE DTI SEP 23 2021 AM 11:43

TABLE B - For plugging intervals that will employ approved non-cement based sealant(s). Start with deepest interval.

	Interval 1 – deepest	Interval 2	Interval 3 – most shallow
			Note: if the well is non-artesian and breaches only one aquifer, use only this column.
Top of proposed interval of sealant placement (ft bgl)			
Bottom of proposed sealant of grout placement (ft bgl)			
Theoretical volume of sealant required per interval (gallons)			
Proposed abandonment sealant (manufacturer and trade name)			

DSE DJT SEP 23 2021 AM 11:43



# New Mexico Office of the State Engineer Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)			
		Q64	Q16	Q4	Sec	Tws	Rng	X	Y
L	10251	4	4	11	20S	36E	657817	3606224*	

**Driller License:**

**Driller Company:**

**Driller Name:**

**Drill Start Date:**

**Drill Finish Date:**

**Plug Date:**

**Log File Date:**

**PCW Rcv Date:**

**Source:**

**Pump Type:**

**Pipe Discharge Size:**

**Estimated Yield:**

**Casing Size:**

**Depth Well:**

**Depth Water:**

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

3/3/22 1:23 PM

POINT OF DIVERSION SUMMARY

Revised December 1975

IMPORTANT — READ INSTRUCTIONS ON BACK BEFORE FILLING OUT THIS FORM.

# Declaration of Owner of Underground Water Right

Lea County Underground Water Basin

BASIN NAME

Declaration No. L-10,251

Date received April 22, 1992

### STATEMENT

- Name of Declarant Faye L. Klein  
Mailing Address Box 1503 Hobbs  
County of Lea, State of New Mexico
- Source of water supply shallow  
(artesian or shallow water aquifer)
- Describe well location under one of the following subheadings:  
a.  $\frac{1}{4}$  SE  $\frac{1}{4}$  SE of Sec. 11 Twp. 20 S Rge. 36 E N.M.P.M., in Lea County.  
b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_  
c. X = \_\_\_\_\_ feet, Y = \_\_\_\_\_ feet, N. M. Coordinate System \_\_\_\_\_ Zone \_\_\_\_\_ in the \_\_\_\_\_ Grant.  
On land owned by \_\_\_\_\_
- Description of well: date drilled unknown driller unknown depth 32' feet.  
outside diameter of casing 7 $\frac{1}{4}$  inches; original capacity \_\_\_\_\_ gal. per min.; present capacity \_\_\_\_\_ gal. per min.; pumping lift \_\_\_\_\_ feet; static water level 55-60' feet (above) (below) land surface;  
make and type of pump Aeromotor windmill  
make, type, horsepower, etc., of power plant \_\_\_\_\_  
Fractional or percentage interest claimed in well 100 0/0
- Quantity of water appropriated and beneficially used 3 acre feet  
(acre feet per acre) (acre feet per annum)  
for domestic, livestock purposes.
- Acreage actually irrigated \_\_\_\_\_ acres, located and described as follows (describe only lands actually irrigated):

Subdivision	Sec.	Twp.	Range	Acres Irrigated	Owner

(Note: location of well and acreage actually irrigated must be shown on plat on reverse side.)

- Water was first applied to beneficial use PRIOR TO 1931 and since that time before the basin was created month \_\_\_\_\_ day \_\_\_\_\_ year \_\_\_\_\_ has been used fully and continuously on all of the above described lands or for the above described purposes except as follows: \_\_\_\_\_

- Additional statements or explanations \_\_\_\_\_

I, Faye L. Klein being first duly sworn upon my oath, depose and say that the above is a full and complete statement prepared in accordance with the instructions on the reverse side of this form and submitted in evidence of ownership of a valid underground water right, that I have carefully read each and all of the items contained therein and that the same are true to the best of my knowledge and belief.

by: Faye L. Klein Klein Ranch, declarant.

Subscribed and sworn to before me this 21st day of April, A.D. 1992

My commission expires August 19, 1993 Dulma R. Madrid Notary Public

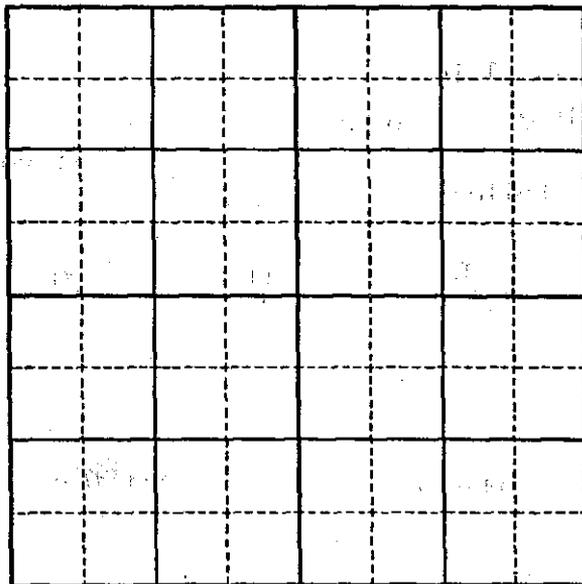
FILED  
STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO  
92 APR 22 AM 8 31

UNDER NEW MEXICO LAW A DECLARATION IS ONLY A STATEMENT OF DECLARANT'S CLAIM; ACCEPTANCE FOR FILING DOES NOT CONSTITUTE APPROVAL OR REJECTION OF THE CLAIM.

11315

Locate well and areas actually irrigated as accurately as possible on following plat:

Section (s) \_\_\_\_\_, Township \_\_\_\_\_, Range \_\_\_\_\_ N. M. P. M.



**INSTRUCTIONS**

Declaration shall be executed (preferably typewritten) in triplicate and must be accompanied by a \$1.00 filing fee. Each of triplicate copies must be properly signed and attested.

A separate declaration must be filed for each well in use.

All blanks shall be filled out fully. Required information which cannot be sworn to by declarant shall be supplied by affidavit of person or persons familiar with the facts and shall be submitted herewith.

Secs. 1-3. Complete all blanks.

Sec. 4. Fill out all blanks applicable as fully as possible.

Sec. 5. Irrigation use shall be stated in acre feet of water per acre per year applied on the land. If used for domestic, municipal, or other purposes, state total quantity in acre feet used annually.

Sec. 6. Describe only the acreage actually irrigated. When necessary to clearly define irrigated acreages, describe to nearest 2½ acre subdivision. If located on unsurveyed lands, describe by legal subdivision "as projected" from the nearest government survey corners, or describe by metes and bounds and tie survey to some permanent, easily-located natural object.

Sec. 7. Explain and give dates as nearly as possible of any years when all or part of acreage claimed was not irrigated.

Sec. 8. If well irrigates or supplies supplemental water to any other land than that described above, or if land is also irrigated from any other source, explain under this section. Give any other data necessary to fully describe water right.

If additional space is necessary, use a separate sheet or sheets and attach securely hereto.

SK



'92 MAY 4 AM 10 18

**STATE OF NEW MEXICO**

STATE ENGINEER OFFICE  
SANTA FE NEW MEXICO

**STATE ENGINEER OFFICE**

**ROSWELL**

**DISTRICT II**  
1900 West Second St.  
Roswell, New Mexico 88201  
(505) 622-6521

**ELUID MARTINEZ**  
STATE ENGINEER

April 30, 1992

Files: L-10,245; L-10,246; L-10,247; L-10,248;  
L-10,249; L-10,250; L-10,251; L-10,252

Faye L. Klein  
P. O. Box 1503  
Hobbs, NM 88240

Dear Ms. Klein:

Enclosed are your copies of Declarations of Owner of Underground Water Right as numbered above, which have been filed for record in the office of the State Engineer.

Please refer to these numbers in all future correspondence concerning these declarations.

The filing of these declarations does not indicate affirmation or rejection of the statements contained therein.

Yours very truly,

Johnny R. Hernandez  
Lea County Basin Supervisor

JRH/fh  
Encls.

cc: Santa Fe



# New Mexico Office of the State Engineer

## Point of Diversion Summary

<b>Well Tag</b>	<b>POD Number</b>	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)				
		(quarters are smallest to largest)	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tws</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
20D32	L 15041 POD1		2	2	4	11	20S	36E	657963	3606685

<b>Driller License:</b> 1626	<b>Driller Company:</b> TAYLOR, ROY ALLEN	
<b>Driller Name:</b> ROY TAYLOR		
<b>Drill Start Date:</b> 12/01/2020	<b>Drill Finish Date:</b> 12/01/2020	<b>Plug Date:</b>
<b>Log File Date:</b> 12/10/2020	<b>PCW Rev Date:</b>	<b>Source:</b> Shallow
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b> 13 GPM
<b>Casing Size:</b> 5.90	<b>Depth Well:</b> 63 feet	<b>Depth Water:</b> 42 feet

Water Bearing Stratifications:	Top	Bottom	Description
	30	43	Sandstone/Gravel/Conglomerate

Casing Perforations:	Top	Bottom
	23	63

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

3/3/22 1:25 PM

POINT OF DIVERSION SUMMARY

File No. **L-15041**

**NEW MEXICO OFFICE OF THE STATE ENGINEER**



**APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTIONS 72-12-1.1, 72-12-1.2, OR 72-12-1.3 NEW MEXICO STATUTES**



For fees, see State Engineer website: <http://www.ose.state.nm.us/>

**1. APPLICANT(S)**

Name: L&K Ranch LLC		Name:	
Contact or Agent: check here if Agent <input checked="" type="checkbox"/>		Contact or Agent: check here if Agent <input type="checkbox"/>	
Chris Cortez (Atkins Engineering Associates, Inc)			
Mailing Address: 2904 W 2nd St		Mailing Address:	
City: Roswell		City:	
State: NM	Zip Code: 88201	State:	Zip Code:
Phone: Phone (Work): 575.624.2420	<input type="checkbox"/> Home <input type="checkbox"/> Cell	Phone: Phone (Work):	<input type="checkbox"/> Home <input type="checkbox"/> Cell
E-mail (optional): chris@atkinseng.com		E-mail (optional):	

Check here if existing well. Enter OSE File No. \_\_\_\_\_

**2. WELL LOCATION Required: Coordinate location must be New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84). District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.**

NM State Plane (NAD83) - In feet	NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	X (in feet): Y (in feet):		
UTM (NAD83) - In meters	UTM Zone 13N <input type="checkbox"/> UTM Zone 12N <input type="checkbox"/>	Easting (in meters): Northing (in meters):		
Lat/Long (WGS84) - To 1/10 <sup>th</sup> of second <input checked="" type="checkbox"/> Check if seconds are decimal format	Lat: 32 deg	35 min	11.0 sec	
	Long: -103 deg	19 min	1.0 sec	
Other Location Information (complete the below, if applicable):				
PLSS Quarters or Halves:	NE/4NE/4SE/4	Section: 11	Township: 20S	Range: 36E
County: Lea				
Land Grant Name (if applicable): n/a				
Lot No:	Block No:	Unit/Tract:	Subdivision:	
Hydrographic Survey:		Map:	Tract:	
Other description relating well to common landmarks, streets, or other:				
<b>Well is on Land Owned by (Required): Applicant</b>				

FOR OSE INTERNAL USE

Application for Permit, Form wr-01, Rev 6/30/17

File No.: <b>L-15041 POD1</b>	Tm. No.: <b>681311</b>	Receipt No.:
Well Tag ID No. (if applicable): <b>20D32</b>	Sub-Basin: <b>L</b>	Log Due Date: <b>11-5-21</b>

3. PURPOSE OF USE

Domestic use for one household  
 Livestock watering  
 Domestic use for more than one household. Number of households \_\_\_\_ Note: List each lot and owner contact information.  
 Drinking and sanitary uses that are incidental to the operations of a governmental, commercial, or non-profit facility  
 Prospecting, mining or drilling operations to discover or develop natural resources  
 Construction of public works, highways and roads  
 Domestic use for one household and livestock watering  
 Domestic use for multiple households and livestock watering  
 Domestic well to accompany a house or other dwelling unit constructed for sale  
 New well (with new purpose)  
 Amend purpose of use on existing well  
 No change in purpose

4. WELL INFORMATION: CHECK THOSE THAT APPLY  Existing Well  Known Artesian

File Information: (If existing well, provide OSE no. & indicate below if well is to be replacement, repaired or deepened, or supplemental. If new well, leave blank, as OSE must assign no.)

OSE Well No.(If Existing)	New Well No. (provided by OSE) L-
Well Driller Name: NM Licensed	Well Driller License Number: TBD
Approximate Depth of Well (feet): 65	Outside Diameter of Well Casing (inches): up to 7"

<input type="checkbox"/> Replacement well (List all existing wells if more than one):	<input type="checkbox"/> Repair or Deepen: <input type="checkbox"/> Clean out well to original depth <input type="checkbox"/> Deepen well from ____ to ____ ft. <input type="checkbox"/> Other (Explain):	<input type="checkbox"/> Supplemental well (List OSE No. for all wells this will supplement):
--	--	--

5. ADDITIONAL STATEMENTS OR EXPLANATIONS (Use additional sheets if necessary)

Application to drill a new livestock well. Well will be drilled up to the the maximum depth of the fill to the top of the Chinle red bed.

ACKNOWLEDGEMENT

I, We (name of applicant(s)), Chris Cortez (Atkins Engineering Associates, Inc as agent for the applicant)  
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

Chris Cortez  
Applicant Signature

\_\_\_\_\_  
Applicant Signature

ACTION OF THE OFFICE OF THE STATE ENGINEER (FOR OSE USE ONLY)

This application is approved subject to the attached general and specific conditions of approval.

Witness my hand and seal this 5 day of Nov 2020, for the New Mexico State Engineer,

By: [Signature]  
Signature

\_\_\_\_\_  
Print

FOR OSE INTERNAL USE

Well Tag ID Issued?  Yes  No

Application for Permit, Form wr-01, Rev 6/30/17

File No.: <u>L-15041</u>	Trn No.: <u>681311</u>	Well ID Tag No.: <u>20D32</u>
--------------------------	------------------------	-------------------------------

OSE DTI OCT 28 2020 4:07

**NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

**GENERAL CONDITIONS OF APPROVAL (A thru R)**

- 17-A The maximum combined diversion of all wells that may be appropriated under this permit is 3.000 acre-feet in any year (One acre-foot equals 325,851 gallons).
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig; provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record. The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-D The production casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
- 17-E To request a change to the purpose of use of water authorized under this permit, the permittee shall file an application with the State Engineer.
- 17-F An application for a new 72-12-1.1 NMSA 2003 domestic well permit where the proposed point of diversion is to be located on the same legal lot of record as an operational 72-12-1.1 NMSA domestic well shall be treated as an application for a supplemental well and the combined diversion may not exceed the maximum annual diversion permitted.
- 17-G If artesian water is encountered, the well driller shall comply with all rules and regulations pertaining to the drilling and casing of artesian wells.
- 17-H The drilling of the well and amount and uses of water permitted are subject to such limitations as may be imposed by a court or by lawful municipal or county ordinance which are more restrictive than the conditions of this permit and applicable State Engineer regulations.

Trn Desc: L 15041 POD1  
Log Due Date: 11/05/2021  
Form: wr-01

File Number: L 15041  
Trn Number: 681311

**NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

**GENERAL CONDITIONS OF APPROVAL (Continued)**

- 17-I The permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-J The well shall be set back a minimum of 50 ft. from an existing well of other ownership unless a variance has been granted by the State Engineer. The State Engineer may grant a variance for a replacement well or to allow for maximum spacing of the well from a source of groundwater contamination. The well shall be set back from potential sources of contamination in accordance with federal, state, and local requirements.
- 17-K Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.
- 17-L The permit is subject to cancellation for non-compliance with the conditions of approval or if otherwise not exercised in accordance with the terms of the permit.
- 17-M The right to divert water under this permit is subject to curtailment by priority administration as implemented by the State Engineer or a court.
- 17-N In the event of any change of ownership to this permit the new owner shall file a change of ownership form with the State Engineer in accordance with Section 72-1-2.1 NMSA 1978.
- 17-O This well permit shall automatically expire unless the well is completed and the well record is filed with the State Engineer within one year of the date of issuance of the permit.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.

Trn Desc: L 15041 POD1  
Log Due Date: 11/05/2021  
Form: wr-01

File Number: L 15041  
Trn Number: 681311

page: 2

NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES

GENERAL CONDITIONS OF APPROVAL (Continued)

17-R The State Engineer shall supply a well identification tag for the well driller to firmly affix to the well casing or cap with a steel band upon completion in accordance with Subsection M of 19.27.4.29 NMAC.  
The permit holder is responsible for maintaining the well identification tag.

Well Tag(s) associated with this permit:  
20D32

SPECIFIC CONDITIONS OF APPROVAL

- 17-1B Depth of the well shall not exceed the thickness of the Ogallala formation.
- 17-10 Total diversion from all wells under this permit number shall not exceed 3.000 acre-feet per annum.
- 17-14 This permit authorizes the diversion of water for watering livestock. The total diversion of water under this permit shall not exceed 3.000 acre-feet per year.
- LOG This permit will automatically expire unless the well L 15041 POD1 is completed and the well record filed on or before 11/05/2021.

ACTION OF STATE ENGINEER

This application is approved for the use indicated, subject to all general conditions and to specific conditions listed above.

Witness my hand and seal this 05 day of Nov A.D., 2020

John R. D Antonio, Jr., P.E., State Engineer

By:   
YOLANDA MENDIOLA

Trn Desc: L 15041 POD1  
Log Due Date: 11/05/2021  
Form: wr-01

File Number: L 15041  
Trn Number: 681311

John R. D Antonio, Jr., P.E.  
State Engineer



Roswell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

**STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 681311  
File Nbr: L 15041

Nov. 05, 2020

CHRIS CORTEZ, AEA  
L&K RANCH LLC  
2904 W 2ND ST  
ROSWELL, NM 88201

Greetings:

Enclosed is your copy of the above numbered permit that has been approved in accordance with NM Statute Section 72-12-1 subject to the conditions set forth on the approval page.

Carefully review the attached conditions of approval for these specific permit requirements:

- \* The applicant is responsible for providing the contracted driller with the permit Conditions of Approval and the enclosed well identification tag (if applicable), which must be firmly affixed to the well casing or cap.
- \* If metering is required, a meter report form must be properly completed and submitted to this office upon installation.
- \* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole. When conditions require a replaced well be plugged, a plugging record must be properly completed and submitted to this office within 30 days of plugging.
- \* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website [www.ose.state.nm.us](http://www.ose.state.nm.us) or will be mailed upon request.

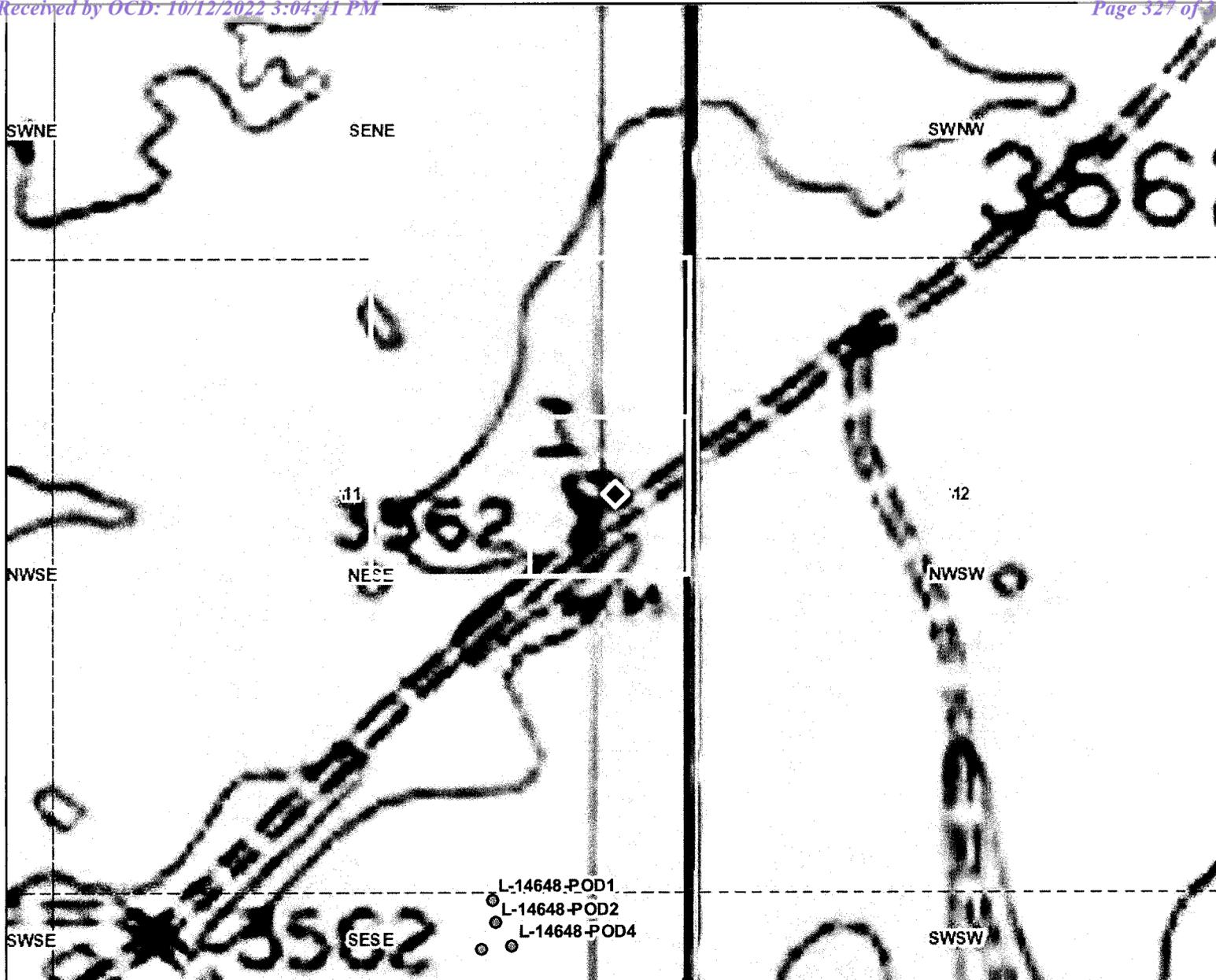
Sincerely,

A handwritten signature in black ink, appearing to read "Yolanda Mendiola".

Yolanda Mendiola  
(575) 622-6521

Enclosure

wr\_01app



NEW MEXICO OFFICE OF THE STATE ENGINEER

**Coordinates**  
UTM - NAD 83 (m) - Zone 13  
 Easting 657963.994  
 Northing 3606684.650  
State Plane - NAD 83 (f) - Zone E  
 Easting 854394.016  
 Northing 578552.580  
Degrees Minutes Seconds  
 Latitude 32 : 35 : 11.000000  
 Longitude -103 : 19 : 1.000000  
 Location pulled from Coordinate Search

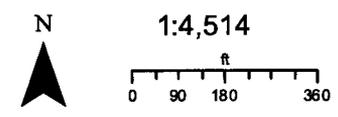


Image Info  
 Source: NA  
 Date: NA  
 Resolution (m): NA  
 Accuracy (m): NA

**Spatial Information**  
**OSE Administrative Area:** Lea  
**County:** Lea  
**Groundwater Basin:** Lea County  
**Abstract Area:** L  
**Sub-Basin:** Landreth-Monumnet Draws  
**Land Grant:** Not in Land Grant  
**Restrictions:**  
 Lea County Critical Management Area  
**PLSS Description**  
 SENENESE Qtr of Sec 11 of 020S 036E  
 Derived from CADNSD1-Qtr Sec. Locations are calculated and are only approximations

- Calculated PLSS
- Coord Search Location
- Pending
- Lea County Parcels 2020
- Sections
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...

- PLSSSecond...
- USA Topo Maps

**POD Information**  
**Owner:**  
**File Number:** L-15041-POD1  
**POD Status:** NoData  
**Permit Status:** NoData  
**Permit Use:** NoData  
**Purpose:**

11/5/20

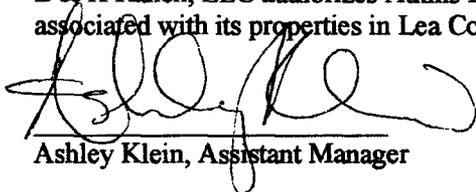
Software and data are provided as is. The user assumes all responsibility for the use of the information. The user agrees to hold the State Engineer and the Interstate Stream Commission harmless from any and all claims, damages, or liabilities, including reasonable attorneys' fees, arising from the use of the information. The user also agrees to indemnify and hold the State Engineer and the Interstate Stream Commission harmless from any and all claims, damages, or liabilities, including reasonable attorneys' fees, arising from the use of the information.

Office of the State Engineer  
Water Rights District II- Roswell:  
1900 W 2<sup>nd</sup> St  
Roswell, NM 88201

RE: Agent Authorization Atkins Engineering Associates, Inc.

To whom it may concern:

L & K Ranch, LLC authorizes Atkins Engineering Associates, Inc. to act as its agent for any filings associated with its properties in Lea County.

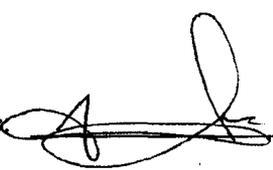
  
Ashley Klein, Assistant Manager

10-15-18  
Date

ACKNOWLEDGEMENT:

STATE OF Texas )  
)  
COUNTY OF Tarrant )

This instrument was acknowledged before me this 15 day of October, 2018, by Ashley Klein, Assistant Manager of L & K Ranch, LLC, on behalf of said company.

Notary Public 



My Commission Expires: 01-04-2022

088 011 OCT 25 2018 14:07



2904 W 2nd St.  
Roswell, NM 88201  
voice: 575.624.2420  
fax: 575.624.2421  
www.atkinseng.com

10/19/2020

Office of the State Engineer  
Water Rights District 2– Roswell:  
1900 W 2<sup>nd</sup> St  
Roswell, NM 88201

*Hand delivered to the Office of the State Engineer*

File:L-  
Re: Livestock Application

To Whom it May Concern:

Enclosed please find, in triplicate, *Application For permit to Use Underground Water in Accordance with Sections 72.12.1.2*. A check for \$5.00 is included with an agent authorization.

If you have any questions, please contact me at [chris@atkinseng.com](mailto:chris@atkinseng.com) or 575.914.0174.

Sincerely,

A handwritten signature in black ink that reads "Chris Cortez". The signature is written in a cursive, flowing style.

Chris Cortez

USE DT OCT 25 2020 14:07



# New Mexico Office of the State Engineer Point of Diversion Summary

Well Tag	POD Number	(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)				
		Q64	Q16	Q4	Sec	Tws	Rng	X	Y	
NA	L 14799 POD1	1	1	2	14	20S	36E	657271	3605935	

**Driller License:**

**Driller Company:**

**Driller Name:**

**Drill Start Date:**

**Drill Finish Date:**

**Plug Date:**

**Log File Date:**

**PCW Rcv Date:**

**Source:**

**Pump Type:**

**Pipe Discharge Size:**

**Estimated Yield:**

**Casing Size:**

**Depth Well:**

**Depth Water:**

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

3/3/22 1:27 PM

POINT OF DIVERSION SUMMARY

File No. L-14799

**NEW MEXICO OFFICE OF THE STATE ENGINEER**



**APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS IN ACCORDANCE WITH SECTIONS 72-12-1.1, 72-12-1.2, OR 72-12-1.3 NEW MEXICO STATUTES**



For fees, see State Engineer website: <http://www.ose.state.nm.us/>

**1. APPLICANT(S)**

Name: L&K Ranch, LLC	Name:
Contact or Agent: <input checked="" type="checkbox"/> check here if Agent Atkins Engineering Associates, Inc. 2904 W 2nd St., Roswell, NM	Contact or Agent: <input type="checkbox"/> check here if Agent
Mailing Address: P.O. Box 1503	Mailing Address:
City: Hobbs	City:
State: NM Zip Code: 88241	State: Zip Code: 87501
Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell Phone (Work): 575.624.2420 Agent	Phone: <input type="checkbox"/> Home <input type="checkbox"/> Cell Phone (Work):
E-mail (optional): chris@atkinseng.com	E-mail (optional):

Check here if existing well. Enter OSE File No. unknown

**2. WELL LOCATION Required: Coordinate location must be New Mexico State Plane (NAD 83), UTM (NAD 83), or Lat/Long (WGS84). District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.**

NM State Plane (NAD83) - In feet	NM West Zone <input type="checkbox"/> NM Central Zone <input type="checkbox"/> NM East Zone <input type="checkbox"/>	X (in feet): Y (in feet):
UTM (NAD83) - In meters	UTM Zone 13N <input type="checkbox"/> UTM Zone 12N <input type="checkbox"/>	Easting (in meters): Northing (in meters):
Lat/Long (WGS84) - To 1/10 <sup>th</sup> of second <input type="checkbox"/> Check if seconds are decimal format	Lat: 32 deg Long: 103 deg	34 min 47 sec 19 min 28 sec
Other Location Information (complete the below, if applicable): PLSS Quarters or Halves: <u>NWNWNE</u> Section: <u>14</u> Township: <u>20S</u> Range: <u>36E</u>		
County: <u>Lea</u>		
Land Grant Name (if applicable): <u>n/a</u>		
Lot No:	Block No:	Unit/Tract: Subdivision:
Hydrographic Survey:	Map:	Tract:
Other description relating well to common landmarks, streets, or other:		
<b>Well is on Land Owned by (Required): Applicant</b>		

FOR OSE INTERNAL USE

Application for Permit, Form wr-01, Rev 6/30/17

File No.: <u>L-14799</u>	Trm. No.: <u>661607</u>	Receipt No.: <u>2-41370</u>
Well Tag ID No. (if applicable): <u>---</u>	Sub-Basin: <u>L</u>	Log Due Date: <u>---</u>

3. PURPOSE OF USE

Domestic use for one household

Livestock watering

Domestic use for more than one household. Number of households \_\_\_\_ Note: List each lot and owner contact information.

Drinking and sanitary uses that are incidental to the operations of a governmental, commercial, or non-profit facility

Prospecting, mining or drilling operations to discover or develop natural resources

Construction of public works, highways and roads

Domestic use for one household and livestock watering

Domestic use for multiple households and livestock watering

Domestic well to accompany a house or other dwelling unit constructed for sale

New well (with new purpose)

Amend purpose of use on existing well

No change in purpose

4. WELL INFORMATION: CHECK THOSE THAT APPLY  Existing Well  Known Artesian

File Information: (If existing well, provide OSE no. & indicate below if well is to be replacement, repaired or deepened, or supplemental. If new well, leave blank, as OSE must assign no.)

OSE Well No.(If Existing) Unknown	New Well No. (provided by OSE) L-
Well Driller Name: Unknown	Well Driller License Number: unknown
Approximate Depth of Well (feet): 50	Outside Diameter of Well Casing (inches): 4.5"

<input type="checkbox"/> Replacement well (List all existing wells if more than one):	<input type="checkbox"/> Repair or Deepen: <input type="checkbox"/> Clean out well to original depth <input type="checkbox"/> Deepen well from ____ to ____ ft. <input type="checkbox"/> Other (Explain):	<input type="checkbox"/> Supplemental well (List OSE No. for all wells this will supplement):
--	--	--

5. ADDITIONAL STATEMENTS OR EXPLANATIONS (Use additional sheets if necessary)

Existing PVC well. Applicant wants to permit Livestock use.

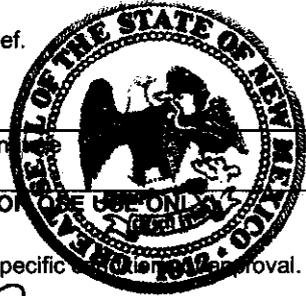
ACKNOWLEDGEMENT

I, We (name of applicant(s)), Christopher Cortez (Atkins Engineering Associates, Inc as agent for the applicant ).  
Print Name(s)

affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.

*[Handwritten Signature]*  
Applicant Signature

*[Handwritten Signature]*  
Applicant Signature



STATE ENGINEER  
OFFICE  
2019 OCT 21 AM 10:15

ACTION OF THE OFFICE OF THE STATE ENGINEER (FOR OSE USE ONLY)

This application is approved subject to the attached general and specific conditions and approval.

Witness my hand and seal this 28th day of Oct 20 19, for the New Mexico State Engineer,  
By: *[Handwritten Signature]* Claudia K. Guillen  
Signature Print

FOR OSE INTERNAL USE

Well Tag ID Issued?  Yes  No

Application for Permit, Form wr-01, Rev 6/30/17

File No.: L-14799 Trn No.: 661607 Well ID Tag No.: \_\_\_\_\_

**NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

**GENERAL CONDITIONS OF APPROVAL (A thru R)**

- 17-A The maximum combined diversion of all wells that may be appropriated under this permit is 3.000 acre-feet in any year (One acre-foot equals 325,851 gallons).
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig; provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record. The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-D The production casing shall not exceed 7 inches outside diameter except under specific conditions in which reasons satisfactory to the State Engineer are shown.
- 17-E To request a change to the purpose of use of water authorized under this permit, the permittee shall file an application with the State Engineer.
- 17-F An application for a new 72-12-1.1 NMSA 2003 domestic well permit where the proposed point of diversion is to be located on the same legal lot of record as an operational 72-12-1.1 NMSA domestic well shall be treated as an application for a supplemental well and the combined diversion may not exceed the maximum annual diversion permitted.
- 17-G If artesian water is encountered, the well driller shall comply with all rules and regulations pertaining to the drilling and casing of artesian wells.
- 17-H The drilling of the well and amount and uses of water permitted are subject to such limitations as may be imposed by a court or by lawful municipal or county ordinance which are more restrictive than the conditions of this permit and applicable State Engineer regulations.

Trn Desc: L 14799 POD1  
Log Due Date: \_\_\_\_\_  
Form: wr-01

File Number: L 14799  
Trn Number: 661607

**NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

**GENERAL CONDITIONS OF APPROVAL (Continued)**

- 17-I The permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-J The well shall be set back a minimum of 50 ft. from an existing well of other ownership unless a variance has been granted by the State Engineer. The State Engineer may grant a variance for a replacement well or to allow for maximum spacing of the well from a source of groundwater contamination. The well shall be set back from potential sources of contamination in accordance with federal, state, and local requirements.
- 17-K Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.
- 17-L The permit is subject to cancellation for non-compliance with the conditions of approval or if otherwise not exercised in accordance with the terms of the permit.
- 17-M The right to divert water under this permit is subject to curtailment by priority administration as implemented by the State Engineer or a court.
- 17-N In the event of any change of ownership to this permit the new owner shall file a change of ownership form with the State Engineer in accordance with Section 72-1-2.1 NMSA 1978.
- 17-O This well permit shall automatically expire unless the well is completed and the well record is filed with the State Engineer within one year of the date of issuance of the permit.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.

Trn Desc: L 14799 POD1  
Log Due Date: \_\_\_\_\_  
Form: wr-01

File Number: L 14799  
Trn Number: 661607

**NEW MEXICO STATE ENGINEER OFFICE  
APPLICATION FOR PERMIT TO USE UNDERGROUND WATERS  
IN ACCORDANCE WITH SECTION 72-12-1 NEW MEXICO STATUTES**

**GENERAL CONDITIONS OF APPROVAL (Continued)**

17-R The State Engineer shall supply a well identification tag for the well driller to firmly affix to the well casing or cap with a steel band upon completion in accordance with Subsection M of 19.27.4.29 NMAC.  
The permit holder is responsible for maintaining the well identification tag.

Well Tag(s) associated with this permit:

**SPECIFIC CONDITIONS OF APPROVAL**

- 17-1B Depth of the well shall not exceed the thickness of the Ogallala formation.
- 17-10 Total diversion from all wells under this permit number shall not exceed 3.000 acre-feet per annum.
- 17-14 This permit authorizes the diversion of water for watering livestock. The total diversion of water under this permit shall not exceed 3.000 acre-feet per year.

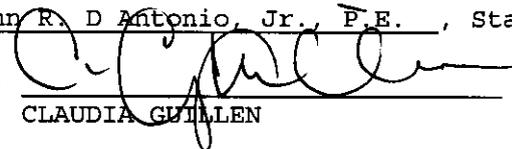
IT IS THE PERMITTEE'S RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

**ACTION OF STATE ENGINEER**

This application is approved for the use indicated, subject to all general conditions and to specific conditions listed above.

Witness my hand and seal this 28 day of Oct A.D., 2019

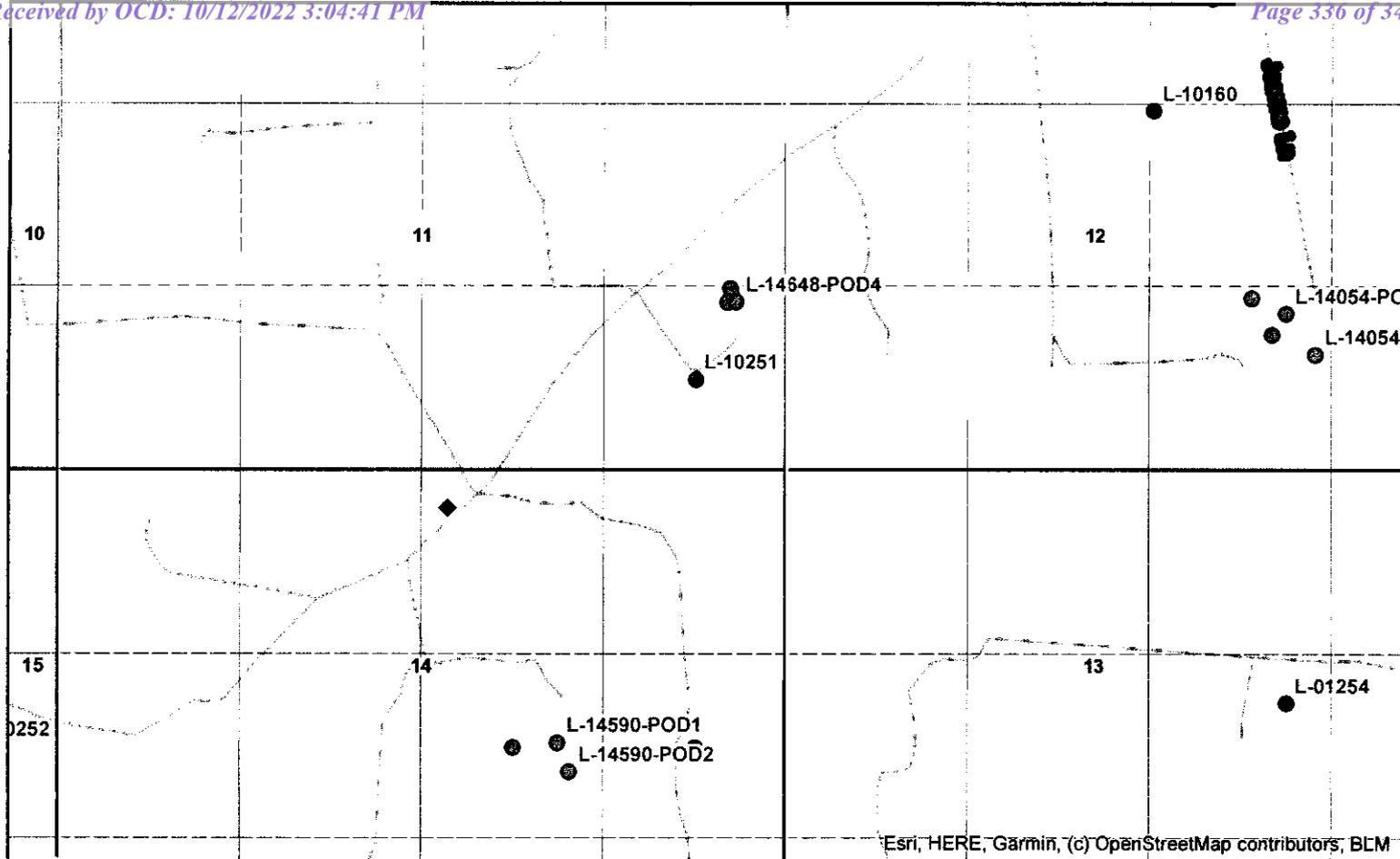
John R. D Antonio, Jr., P.E., State Engineer

By:   
CLAUDIA GUTILLEN



Trn Desc: L 14799 POD1  
Log Due Date: \_\_\_\_\_  
Form: wr-01

File Number: L 14799  
Trn Number: 661607

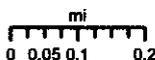


Esri, HERE, Garmin, (c) OpenStreetMap contributors, BLM

**Coordinates**  
Degrees Minutes Seconds  
 Latitude 32 : 34 : 47.000000  
 Longitude -103 : 19 : 28.000000  
State Plane - NAD 83 (f) - Zone E  
 Easting 852106.874  
 Northing 576105.085  
Decimal Degrees  
 Latitude 32.579722  
 Longitude -103.324444  
 Location pulled from Coordinate Search

NEW MEXICO OFFICE  
 OF THE  
 STATE ENGINEER

1:18,056



GUILLEN 10/28/2019



Please note: while this is a search made by the New Mexico Office of the State Engineer (OSE) to verify that the data is accurate, the data is provided as-is. The OSE does not warrant the accuracy of the data. The OSE is not responsible for any errors or omissions in this data. The OSE is not responsible for any errors or omissions in this data. The OSE is not responsible for any errors or omissions in this data.

**Spatial Information**  
 County: Lea  
 Groundwater Basin: Lea County  
 Abstract Area: Lea County  
 Land Grant:  
 Not in Land Grant  
Restrictions:  
 Lea County Critical Management Area  
PLSS Description  
 NWNWNWNE Qtr of Sec 14 of 020S 036E  
 Derived from CADNSDI- Qtr Sec. locations are calculated and are only approximations

**Parcel Information**  
 UPC/DocNum: 4000412520002  
 Parcel Owner: KLEIN, FAYE FAMILY TRUST  
 Address:  
 Legal:

**POD Information**  
 Owner: L&K RANCH/ATKINS  
 File Number: L-14799  
 POD Status: NoData  
 Permit Status: NoData  
 Permit Use: NoData  
 Purpose: DOM/STK

- ◆ Coord Search Location
- CAP
- PLSSSecond...
- GIS WATERS PODs
- Other
- ACT
- PEN
- OSE District Boundary
- BLM Land Grant
- PLSSTownship
- PLSSFirstDiv...



# New Mexico Office of the State Engineer

## Point of Diversion Summary

		(quarters are 1=NW 2=NE 3=SW 4=SE)				(NAD83 UTM in meters)			
		(quarters are smallest to largest)							
<b>Well Tag</b>	<b>POD Number</b>	<b>Q64</b>	<b>Q16</b>	<b>Q4</b>	<b>Sec</b>	<b>Tw</b>	<b>Rng</b>	<b>X</b>	<b>Y</b>
NA	L 14816 POD7	2	4	3	11	20S	36E	657116	3606357

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<b>Driller License:</b> 1249	<b>Driller Company:</b> ATKINS ENGINEERING ASSOC. INC.	
<b>Driller Name:</b> JACKIE D ATKINS		
<b>Drill Start Date:</b> 08/04/2020	<b>Drill Finish Date:</b> 08/04/2020	<b>Plug Date:</b> 08/04/2020
<b>Log File Date:</b> 08/20/2020	<b>PCW Rcv Date:</b>	<b>Source:</b>
<b>Pump Type:</b>	<b>Pipe Discharge Size:</b>	<b>Estimated Yield:</b>
<b>Casing Size:</b>	<b>Depth Well:</b>	<b>Depth Water:</b>

---

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

3/3/22 1:20 PM

POINT OF DIVERSION SUMMARY

John R. D'Antonio, Jr., P.E.  
State Engineer



Roswell Office  
1900 WEST SECOND STREET  
ROSWELL, NM 88201

**STATE OF NEW MEXICO  
OFFICE OF THE STATE ENGINEER**

Trn Nbr: 661607  
File Nbr: L 14799

Oct. 28, 2019

L&K RANCH, LLC  
C/O CHRIS CORTEZ/ATKINS ENG ASSOC, LLC  
PO BOX 1503  
HOBBS, NM 88241

Greetings:

Enclosed is your copy of the above numbered permit that has been approved in accordance with NM Statute Section 72-12-1 subject to the conditions set forth on the approval page.

Carefully review the attached conditions of approval for these specific permit requirements:

- \* The applicant is responsible for providing the contracted driller with the permit Conditions of Approval and the enclosed well identification tag (if applicable), which must be firmly affixed to the well casing or cap.
- \* If metering is required, a meter report form must be properly completed and submitted to this office upon installation.
- \* The well record and log must be submitted within 30 days of the completion of the well or if the attempt was a dry hole. When conditions require a replaced well be plugged, a plugging record must be properly completed and submitted to this office within 30 days of plugging.
- \* This permit expires and will be cancelled if no well is drilled and/or a well log is not received by the date set forth in the conditions of approval.

Appropriate forms can be downloaded from the OSE website [www.ose.state.nm.us](http://www.ose.state.nm.us) or will be mailed upon request.

Sincerely,

A handwritten signature in black ink, appearing to read "C. Guillen".

Claudia Guillen  
(575) 622-8521

Enclosure

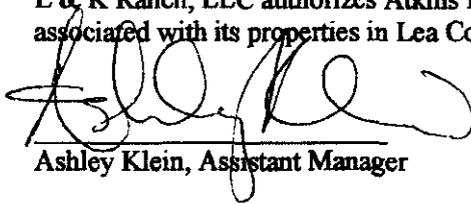
wr\_01app

Office of the State Engineer  
Water Rights District II- Roswell:  
1900 W 2<sup>nd</sup> St  
Roswell, NM 88201

RE: Agent Authorization Atkins Engineering Associates, Inc.

To whom it may concern:

L & K Ranch, LLC authorizes Atkins Engineering Associates, Inc. to act as its agent for any filings associated with its properties in Lea County.

  
Ashley Klein, Assistant Manager

10-15-18  
Date

ACKNOWLEDGEMENT:

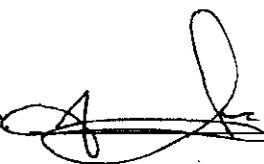
STATE OF Texas )

)

COUNTY OF Tarrant )

10-15-18  
Ashley Klein  
Assistant Manager  
L & K Ranch, LLC

This instrument was acknowledged before me this 15 day of October, 2018, by Ashley Klein, Assistant Manager of L & K Ranch, LLC, on behalf of said company.

Notary Public 



My Commission Expires: 01-04-2022



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

<b>1. GENERAL AND WELL LOCATION</b>	OSE POD NO. (WELL NO.) POD7 (BH14)		WELL TAG ID NO. n/a		OSE FILE NO(S). L-14816			
	WELL OWNER NAME(S) XTO Energy, Inc.				PHONE (OPTIONAL)			
	WELL OWNER MAILING ADDRESS 6401 Holiday Hill Road				CITY Midland	STATE TX	ZIP 79707	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE	MINUTES 32	SECONDS 35	0.80	* ACCURACY REQUIRED: ONE TENTH OF A SECOND		
		LONGITUDE	-103	19	33.70	* DATUM REQUIRED: WGS 84		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE SE SW Sec. 11 T20S R36E								
<b>2. DRILLING &amp; CASING INFORMATION</b>	LICENSE NO. 1249	NAME OF LICENSED DRILLER Jackie D. Atkins			NAME OF WELL DRILLING COMPANY Atkins Engineering Associates, Inc.			
	DRILLING STARTED 08/04/2020	DRILLING ENDED 08/04/2020	DEPTH OF COMPLETED WELL (FT) n/a	BORE HOLE DEPTH (FT) 32	DEPTH WATER FIRST ENCOUNTERED (FT) n/a			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)				STATIC WATER LEVEL IN COMPLETED WELL (FT) n/a			
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow Stem Auger							
	DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	FROM	TO						
	0	32	±6.5	Soil Boring	--	--	--	--
<b>3. ANNULAR MATERIAL</b>	DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		
	FROM	TO						

USE BY AUG 20 2020 11:54

FOR OSE INTERNAL USE				WR-20 WELL RECORD & LOG (Version 06/30/17)			
FILE NO.	L-14816	POD NO.	7	TRN NO.	675513		
LOCATION	432	T20S	R36E	Well	WELL TAG ID NO.	NA	PAGE 1 OF 2



**APPENDIX I**

**EPA UNDERGROUND DISCHARGE SYSTEM (CLASS V) INVENTORY SHEET**

FOR SAMPLE USE ONLY – COMPARABLE FORMAT ACCEPTABLE

### UNDERGROUND DISCHARGE SYSTEM (CLASS V) INVENTORY SHEET

(see instructions on back)

1. Name of facility: WTX to EMSU Battery to Byrd Pump Segment

Address of facility: L&K Ranch near County Road 46 / - 32.583874, -103.317460

City/Town: Monument State: NM Zip Code: 88240

County: Lea Location: \_\_\_\_\_

Contact Person: Melanie Nolan Phone Number: (214) 605-8303

2. Name of Owner or Operator: Holly Energy Partners - Operating, L.P. (HEP)

Address of Owner or Operator: 1602 W. Main, Artesia NM 88210

City/Town: Artesia State: NM Zip Code: 88210

3. Type & number of system(s):  Drywell(s)  Septic System(s)  Other(describe): Bioventing In Site Wells  
Attach a schematic of the system. Attach a map or sketch of the location of the system at the facility.

4. Source of discharge into system: Ambient air injected into subsurface via air compressor at proposed bioventing wells BV-1, BV-2, BV-3, and BV-4

5. Fluids discharged: Ambient air

6. Treatment before discharge: None

7. Status of underground discharge system:  Existing  Unused/Abandoned  Under Construction  Proposed

Approved/Permitted by: NMOCD Date constructed: \_\_\_\_\_

#### CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32).

Signature: Melanie Nolan Date: 10/12/2022

Name (printed): Melanie Nolan

Official Title: Environmental Specialist

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5**

**UNDERGROUND DISCHARGE SYSTEM (CLASS V ) INVENTORY SHEET INSTRUCTIONS**

Complete one sheet for each different kind of underground discharge or drainage system (Class V well) at your facility or location. For example, several storm water drainage wells of a similar construction can all go on one sheet. Another example could be a business with a single septic system (septic tank with drainfield) that accepts fluids from a paint shop sink in one area, their vehicle maintenance garage floor drains in another area and also serves the employee kitchenette and washroom: this can all go on one form.

The numbers below correspond to the numbers on the front of the sheet.

1. Supply the name and street address of the facility where the Class V well(s) is located. Please be sure to include the County name. If available, provide the Latitude/Longitude of the discharge system. If there is no street address for the discharge system(s), provide a description of the location and show the location on a map. Include the name and phone number of a person to contact if there are any questions regarding the underground discharge system(s) and/or the wastewaters discharged at the facility.
2. Provide the name and mailing address of the owner of the facility or if the facility is operated by lease, the operator of the facility.
3. Provide the number of underground discharge systems at the facility (or location) for the type of system that is described on this sheet. Please use a separate sheet for each different type of system present. If the type of system is "Other", please describe (e.g., french drain, leachfield, improved sinkhole, cesspool, etc.).

Provide a sketch, diagram or blueprints of the construction of the system including the depth below the ground surface that the fluids are released into the soil, sediment or formation. Also provide a map or sketch of the layout of the plumbing or drainage system, including all the connections, and if applicable, indicate each fluid source connection (i.e., floor drains, shop sink, process tank discharge, restrooms, etc.) and any pre-treatment, etc.

4. Describe the kind of business practice that generates the fluids being discharged into the underground system (e.g., body shop, drycleaner, carwash, print shop, restaurant, etc.), and/or if more appropriate, the source of the fluids (e.g., employee & customer restrooms, parking lot drainage, etc.). If available, include the Standard Industrial Classification (SIC) Codes for this facility.
5. List the kinds of fluids that can enter the underground system (e.g., storm water run-off, sanitary waste, solvents, biodegradable soap wash & rinse water, snowmelt from trucks, photo developing fluids, ink, paint & thinner, non-contact cooling water, etc.). Please be as specific as you can about the kinds of fluids or products that can be drained into the system. Generally, good sources for this information are the Material Safety Data Sheets (MSDS) (copies of MSDS could be attached instead of listing all the products). If available, also attach a copy of any chemical analysis for the fluids discharged.
6. Describe the kinds of treatment (if any) that the fluids go through before disposal. Examples of treatment are: grease trap, package plant, oil/water separator, catch basin, metal recovery unit, sand filter, grit cleanser, etc.
7. Select the status of the underground discharge system and include the date the system was constructed. If the status is "Existing" but it is not being used, is unusable, will not be used, or is temporarily abandoned, mark the box for "Unused/Abandoned". If state or local government approval was given for construction of the system, or a permit was issued for the system, please provide the name of the approving authority. Provide an estimated date of construction if the actual date is unknown.

The person signing the submittal should read the certification statement before signing and dating the sheet.

If you have any questions about whether or not you may have an EPA regulated system, or about how to complete this sheet, please call (312) 886-1492. You may also try our website at [www.epa.gov/r5water/uic/uic.htm](http://www.epa.gov/r5water/uic/uic.htm) for information.

Please send completed sheets to: U.S. EPA Region 5  
Underground Injection Control Branch  
ATTN: Lisa Perenchio (WU-16J)  
77 W. Jackson Blvd.  
Chicago, IL 60604

8/02

**APPENDIX J**  
**REFERENCES**



## References

- Abbas et al. 2010. *Flow Zones In Unsaturated Soil Due To Barometric Pumping*. Engineering and Technology Journal, Volume 28, Issue 10: pages 1900-1909.
- Air Force Center for Environmental Excellence (AFCEE). 1992. *Test Plan and Technical Protocol for a Field Treatability Test for Bioventing*. Brooks Air Force Base, Texas. May 1992.
- Bass, David H. 1993. *Estimation of Effective Cleanup Radius for Soil-Vapor Extraction Systems*. Journal of Soil Contamination, Volume 2(2): pages 191-202.
- Cl:aire Technical Bulletin. 2018. *Ground Gas Monitoring and 'Worst-Case' Conditions*. Cl:aire Technical Bulletin TB 17. August 2018.
- Electric Power Research Institute, Inc. (EPRI). 2005. *Reference Handbook for Site-Specific Assessment of Subsurface Vapor Intrusion to Indoor Air*. ID 1008492. March 2005
- Interstate Technology & Regulatory Council (ITRC). 2009. *Technology Overview, Evaluating Natural Source Zone Depletion at Sites with LNAPL*. April 2009.
- Newell et al. 2016. *Advances in Monitoring Petroleum Contaminated Sites* Presentation. Federal Remediation Technologies Roundtable. Reston, Virginia. November 2, 2016.
- NMOCD. 2020. Email "WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)" to HEP Approving *Site Characterization Report, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. December 31, 2020.
- NMOCD. 2021. Email "EMSU (Klien) The Oil Conservation Division (OCD) has approved the application, Application ID: 61641" to HEP Approving *Remediation Workplan Addendum, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. December 9, 2021. NMOCD. 2022. Email "WTX to EMSU Remediation Plan Addendum, C-108, and Associated Federal Forms (NOY1822242858)" to HEP Approving of *Remediation Workplan Addendum, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. April 5, 2022.
- Suthersan, S.S. 1999. *Soil Vapor Extraction*. Remediation Engineering: Design Concepts, Suthersan S.S. Edition.
- TRC. 2020. *Site Characterization Report, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. December 2020.
- TRC. 2021. *Site Characterization Report and Remediation Workplan, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. November 12, 2021.



TRC. 2022. *Remediation Workplan Addendum, WTX to EMSU Battery to Byrd Pump Segment Crude Oil Release, NMOCD Incident No NOY1822242858*. April 1, 2022.

United States Army Corps of Engineers (USACE). 2002. *Soil Vapor Extraction and Bioventing*. Engineering and Design Manual, EM 1110-1-4001. June 3, 2002.

**District I**  
 1625 N. French Dr., Hobbs, NM 88240  
 Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
 811 S. First St., Artesia, NM 88210  
 Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
 1000 Rio Brazos Rd., Aztec, NM 87410  
 Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
 1220 S. St Francis Dr., Santa Fe, NM 87505  
 Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 150523

**CONDITIONS**

Operator: HOLLY ENERGY PARTNERS - OPERATING, LP 1602 W. Main St. Artesia, NM 88210	OGRID: 282505
	Action Number: 150523
	Action Type: [C-141] Release Corrective Action (C-141)

**CONDITIONS**

Created By	Condition	Condition Date
jnobui	Remediation Plan Approved with Conditions. Soil excavation and advancement of soil boring approved. Implementation of Bioventing Pilot Test Approved. Do not proceed with full scale implementation of bioventing system at site until OCD can review data of pilot test. OCD would like to hold a meeting to discuss results of pilot test prior to full scale implementation. At this point a C-108 and EPA UDS Sheet is not required for pilot testing.	11/28/2022