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July 2, 2024

EMNRD - Oil Conservation Division
Mike Bratcher
506 W. Texas Ave
Artesia, NM 88210

RE: West Pearl Queen Stage 1 Abatement Plan Site Investigation
NMOCD reference: NOY181664460946

Mr. Bratcher:

Atkins Engineering Associates, Inc. (AEA), on behalf of Armstrong Energy Corporation, is pleased to provide this report for the West Pearl Queen Site (WPQ).

Previous consultants have worked on this site, and this Plan is submitted to prepare to enter the site into the abatement program described in NMAC 19.15.30 in conjunction with soil investigation and remediation plan submitted July 5, 2023 and to be performed by under NMAC 19.15.29.

Because of the legacy monitoring well installation, steps need to be taken to allow the full remediation efforts under NMAC 19.15.29 before proceeding into full Stage 1 Abatement investigation design.

This report will serve as a summary of site conditions, data collected to date, immediate actions proposed, and follow-up actions to prepare a full investigation.

Site Description

The WPQ is in the NE/4NW/4NE/4 Section 32, Township 19S, Range 35 East, NMPM at approximately 32.62295554°-103.4757431°, with a general land surface of 3,736 feet above mean sea level, from the USGS Topographic Map, all in Lea County New Mexico.

The site was formally a waterflood station and most of the appurtenances have been removed. Two excavations have been open on the site since approximately 2018.

Site Geology and Hydrogeology

The site falls in the Pearl Oil Field southwest of the Mescalero Escarpment or Ridge in what Nicholson Jr and Clebsch Jr (1961) call the Laguna Valley. This area is "covered entirely by dune sand which is stable or semi-stable over most of the area, but which locally drifts…The sand is generally underlain by Recent alluvium but in several places the sand forms topographic highs where it is underlain by a caliche surface." Underlying these quaternary age deposits, are tertiary Ogallala units and below that are Triassic red beds–Chinle followed by Santa Rosa/Sandstone. These red beds are eroded surfaces forming troughs with increasing thicknesses of alluvial fill.

Water has been observed in these troughs but is not necessarily regional. Water has been observed in the Triassic red beds in the Chinle or the Santa Rosa sections at greater depths.

Nicholson Jr and Clebsch Jr (1961) mapped the groundwater of Southern Lea County, but the Site and surrounding section are outside of the mapped alluvial aquifer.

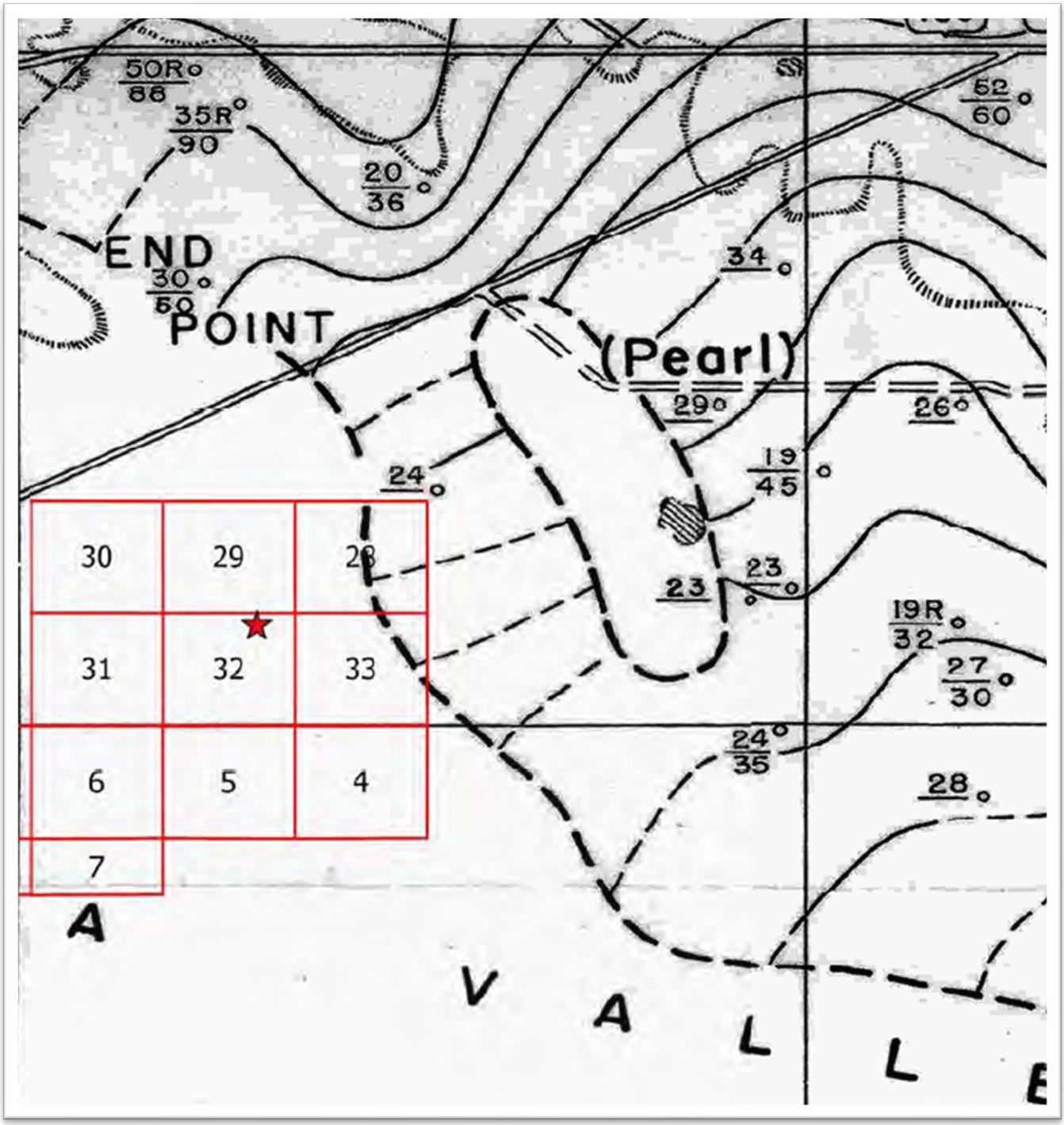


Figure 1: WPQ and Surrouding Section vs. Nicolson and Clebsch 1961

Inventory of Wells

The WPQ is in the NE/4NW/4NE/4 of Section 32, Township 19S, Range 35 East N.M.P.M. To gather an inventory of wells in at least a 1-mile radius, AEA reviewed the Office of the State Engineer (OSE) New Mexico Water Rights Reporting System (NMWRRS) in the following PLSS descriptions.

Section 30, T19S, R35E	Section 29, T19S, R35E	Section 28, T19S, R35E
Section 31, T19S, R35E	WPQ Home Section Section 32, T19S, R35	Section 33, T19S, R35E
Section 6, T20S, R35E	Section 5 T20S, R35E	Section 4 T20S, R35E

Copies of the database searches are found in Appendix A: NMWRRS Query ,and the results are discussed below.

NMWRRS 19S 35E Section 28

One point of diversion **reported** being L-14553 POD12. This well is a permitted commercial point of diversion associated with an appropriation of groundwater to be drilled in the NE/4NE/4SE/4 of said Section 28. It has not been drilled but would be drilled to depths of approximately 1,400 feet below land surface. Based on permitted coordinate, this well would be approximately 1.30 miles north/northeast from the WPQ and based on the observed gradient of the water discovered below the WPQ, this location would be upgradient (see discussion below).

Point of diversion L-14553 POD14 is listed as being in Section 29, however a review of the application and permitted conditions of approval show the well should be located in the NE/4NE/4 NE/4 of **Section 28**. The well has not been drilled but would be drilled to a depth of approximately 1,400 feet below land surface. Based on the permitted coordinate, this well would be approximately 1.55 miles north/northeast from the WPQ.

NMWRRS 19S 35E Section 29

One point of diversion reported being L-14553 POD14. This well is mislocated in NMWRS, see discussion above. So, there are no actual points of diversion in this Section according to OSE.

NMWRRS 19S 35E Section 30

One point of diversion entry reported being RA-12222. This is a mis-entry in the NMWRRS as permit RA-12222 were five (5) exploratory wells permitted by AEA for a soil investigation in the Roswell Artesian Basin. The borings were in Section 30 of Township 19S, Range 25E not Range 35E. There are no actual points of diversion in this Section according to OSE.

NMWRRS 19S 35E Section 31

No points of diversion are reported in this Section.

NMWRRS 19S 35E Section 32

This is the home section of the WPQ and there are 18 points of diversion reported in this section all associated with the investigatory drilling activities performed to date by previous consultants (See discussion below) No other points of diversion were reported in the Section.

NMWRRS 20S 35E Section 04

There are six reported points of diversion in this Section: L-4627, L-14552 POD8, POD10, POD11, POD12, and POD13

Point of diversion, L-4627 is a stock well located in the NE/4NE/4 of Section 4, Township 20S, Range 35E NMPM and listed as being owned by Thelma A. Linam. This well was permitted in 1961, though the permit indicates the well was drilled prior to that date. No well record or log was entered in NMWRRS.

The remaining five points of diversion L-14552 POD8, POD10, POD11, POD12, POD13 are associated with a commercial appropriation of groundwater and are, or to be, located respectively in the SE/4NW/4SW/4, SE/4SE/4SW/4, SE/4NE/4SW/4, NE/4SW/4NE/4 and SW/4SE/4SE/4. Well L-14552 POD 12 was drilled under an exploratory application and is 1390 feet deep, screened from 916 through 1379 feet, cemented from 0-920feet and has an observed water level of 553 feet below land surface. Well L-14552 POD12 is approximately 1.55 miles from the WPQ.

NMWRRS 20S 35E Section 05

There are three (3) reported points of diversion in this Section: L-4158, L-14552 3, L-14552 POD3.

Point of diversion, L-4158, was located. Well L-4158 is a stock well permitted and drilled in 1959 at a point in the NE/4 SE/4 of Section 5, Township 20S, Range 35E NMPM. The owner is listed as Virgil Linam. A well record was available on NMWRRS and indicates the well was drilled to a total depth of 70 feet with a water level on completion at 64 feet. The log indicates the red bed was encountered at 68 feet.

Point of diversion L-14552 3 was an exploratory permit that was never drilled. Point of diversion L-14552 POD3 is the permitted commercial appropriation well, at the same location as L-14552 3, and it has not been drilled. If/when drilled this well would be located approximately 1.22 miles southwest of WPQ.

NMWRRS 20S 35E Section 06

There are two (2) reported points of diversion in this section: L-4157 and L-14097 POD1.

L-4157 is a stock well permitted and drilled in 1959 at a point in the SW/4 SW/4 of Section 6, Township 20S, Range 35E NMPM. The owner is listed as Virgil Linam. A well record was available on NMWRRS and indicates the well was drilled to a total depth of 70 feet with a water level on completion at 64 feet. This well is shown on the USGS topographic map and is near the same location as L-14097 POD1 below. This well is approximately 2.44 miles southwest of the WPQ.

Point of diversion L-14097 POD 1 is a stock well located in the NW/4SW/4SW/4 Section 6 and is approximately 61 feet in depth. The well is approximately 2.44 miles southwest of the WPQ.

Surface Water Hydrology

There are no surface water features near the site. Please refer to the approved PIMA WorkPlan dated July 5, 2023, showing the nearest identified Playa.

Previous Events/Work

The following is a summary of some of the previous events and work that have occurred on site.

During excavation of the site (2018) trenches were dug to 20 feet and were dry in sand initially, but the excavation struck an active freshwater line crossing the site. This freshwater line is fed from well(s) approximately 9 miles to the east/northeast of WPQ near the intersection of

Arkansas Junction and Highway 62 in Lea County. Water is delivered via gravity to Marathon Road water station to the west of WPQ approximately 2 miles. The freshwater quality is high and samples from the active well show chlorides of <30 mg/L, TDS of <350 mg/L and no BTEX above laboratory detection limits.

The excavation filled with this fresh water and was dewatered by pump as much as possible and recovered water was properly disposed. A reroute of the line and temporary repair also failed resulting in a second filling of the excavation. Precipitation events since then have resulted in additional loading of freshwater in the local area. This is especially pronounced in February of 2020. Lastly another failure on the freshwater surface line reroute resulted in a filling of the excavation in September of 2021.

In 2020, previous consultants installed borings (SB-1 through SB-17) and converted some into shallow monitoring wells SB-2, SB-4, SB-5, SB-7, SB-13, SB-14 in/near the footprint of the site and excavation as shown below in Figure 2(See Appendix B: Well Records).

When water was encountered, AEA was contacted and reviewed the situation. AEA surveyors determined the location of the wells and tied the top of casing measuring points together using the techniques described in the Surveying below (See Appendix C: Survey Reports).

Water level measurements and sampling events were performed (by the consultant during/after installation, and then by AEA over time), and the following observations were made.

- Not all of the soil borings appear to have been advanced to the red bed.
- Several of the perimeter soil borings do not show water,or more specifically were not conclusive as to the presence of water at elevations consistent with the nearby observed water levels.
- A localized interpretation of the red bed using the soil boring information shows an apparent trough running from the northeast to the southwest, with the red bed encountered at shallow elevations to the northwest and southeast than in the “heart” of the excavation. This mapping is limited somewhat by direct observation of cuttings, variability of descriptions, placement of wells, etc.
- Boring/Well SB-5 well record shows no initial water encountered and was advanced to 55 feet into the red bed. The lower 30 feet was plugged with bentonite and then that boring was completed shallowly and showed water at 15.38 feet.

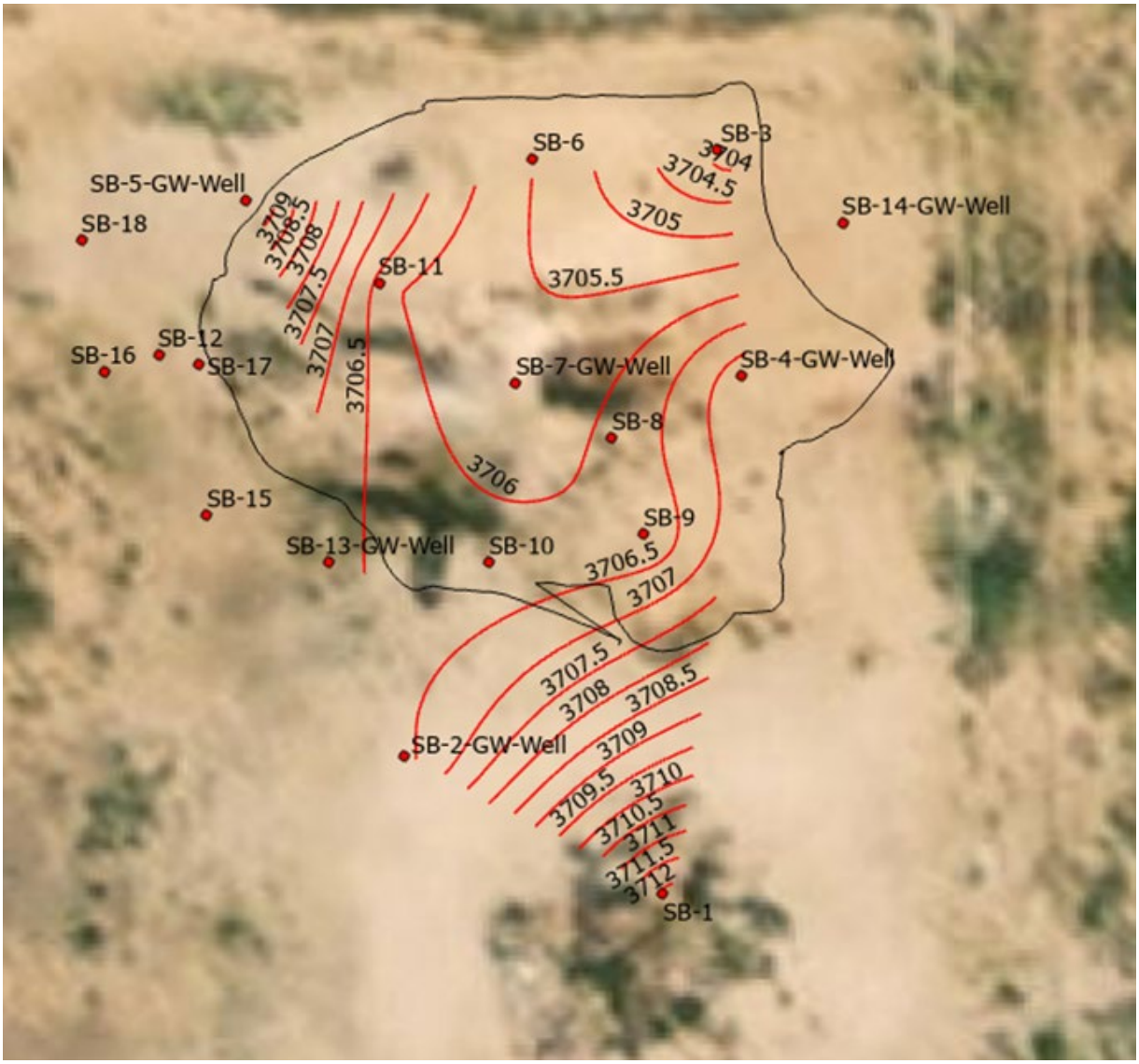


Figure 2: Contour Map redbed

The following are a series of groundwater maps developed by AEA from reported water levels from installation through April 2023 (See Table 1: Groundwater Elevations).

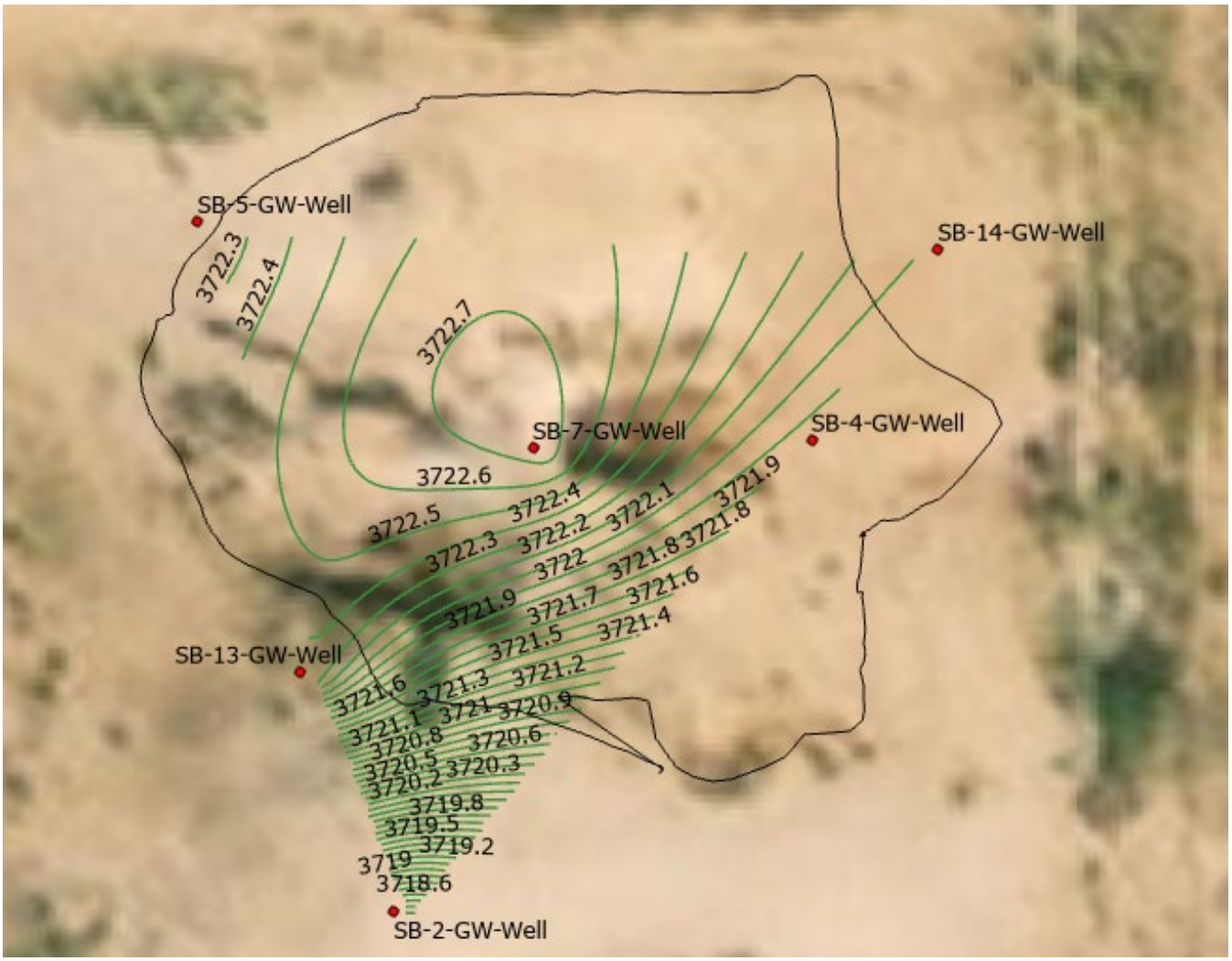


Figure 3: April 2020 Water Table Map

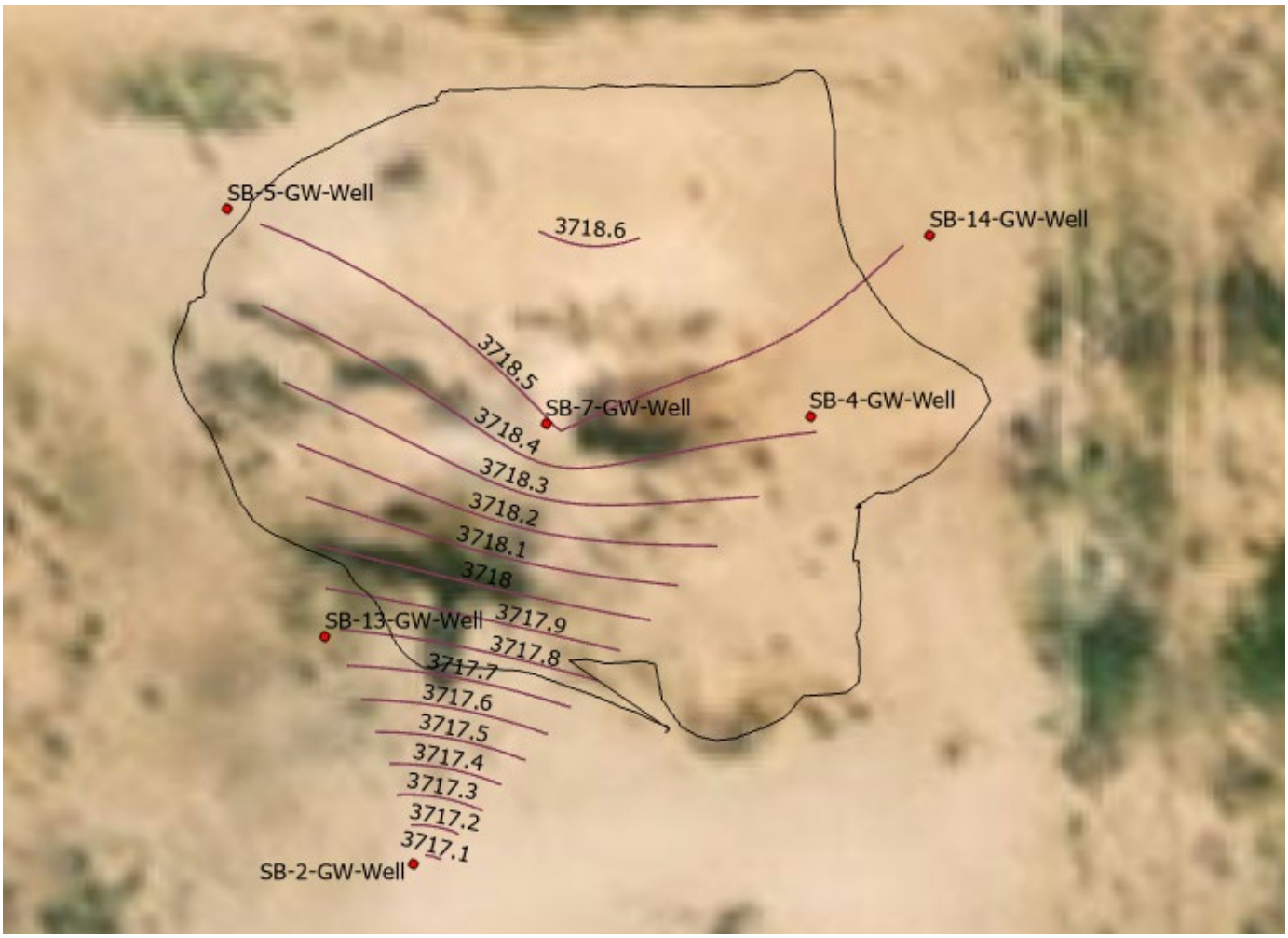


Figure 4: June 2020 Water Table Map

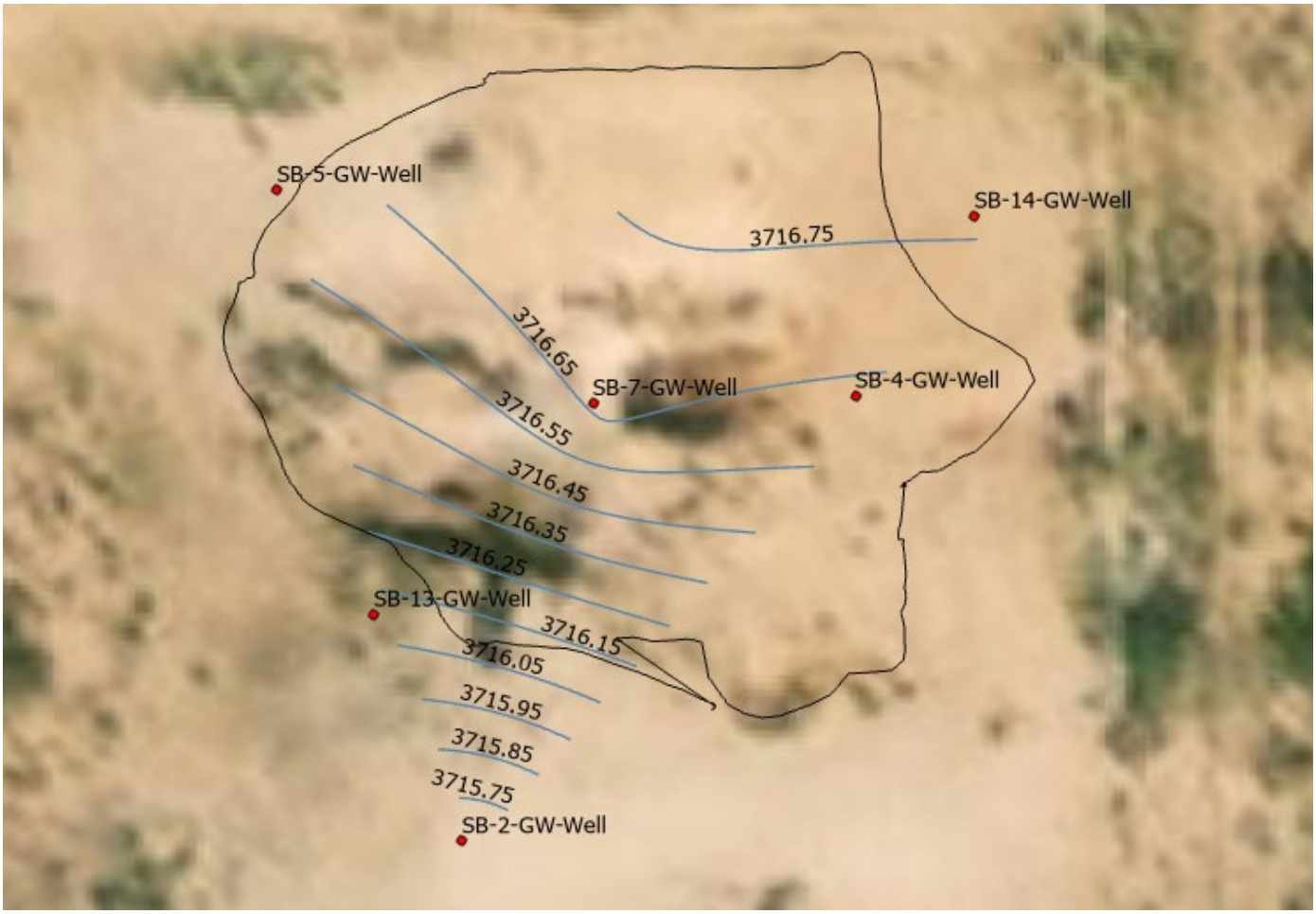


Figure 5: October 2020 Water Level Map

Figure 6: May 2022 Water Level Map-Shallow only

Figure 7: April 2023 Water Level Map-Shallow Only

The April 2020 water level measurements showed a mound of water in the center of the excavation and a general gradient to the south and west. In June 2020, any mounding appears to have dissipated, and the overall gradient is flattening out to the southwest. The water level decline in the center of the excavation is pronounced, but less at the edges.

In October 2020, the declining water levels continued the groundwater direction remains the same, and the gradient continued to flatten. Overall, the direction of flow appears consistent, the gradient is decreasing and water levels in/near the center of the excavation declined sharply over the 2020 observation time frame.

The May 2022 gauging shows a slight increase in water levels from 2020. The excavation has remained open to precipitation events and that coupled with a documented freshwater release in 2021 could be contributing factors.

In April 2023, the overall elevations continued to decline, and the gradient is very slight across the site. The overall decline in the entire observation period is significant, especially when considering that there is no apparent groundwater pumping in the vicinity of the site (there are no known production water wells in the WPQ home Section). Chart 1is a hydrograph of the groundwater elevations over time.

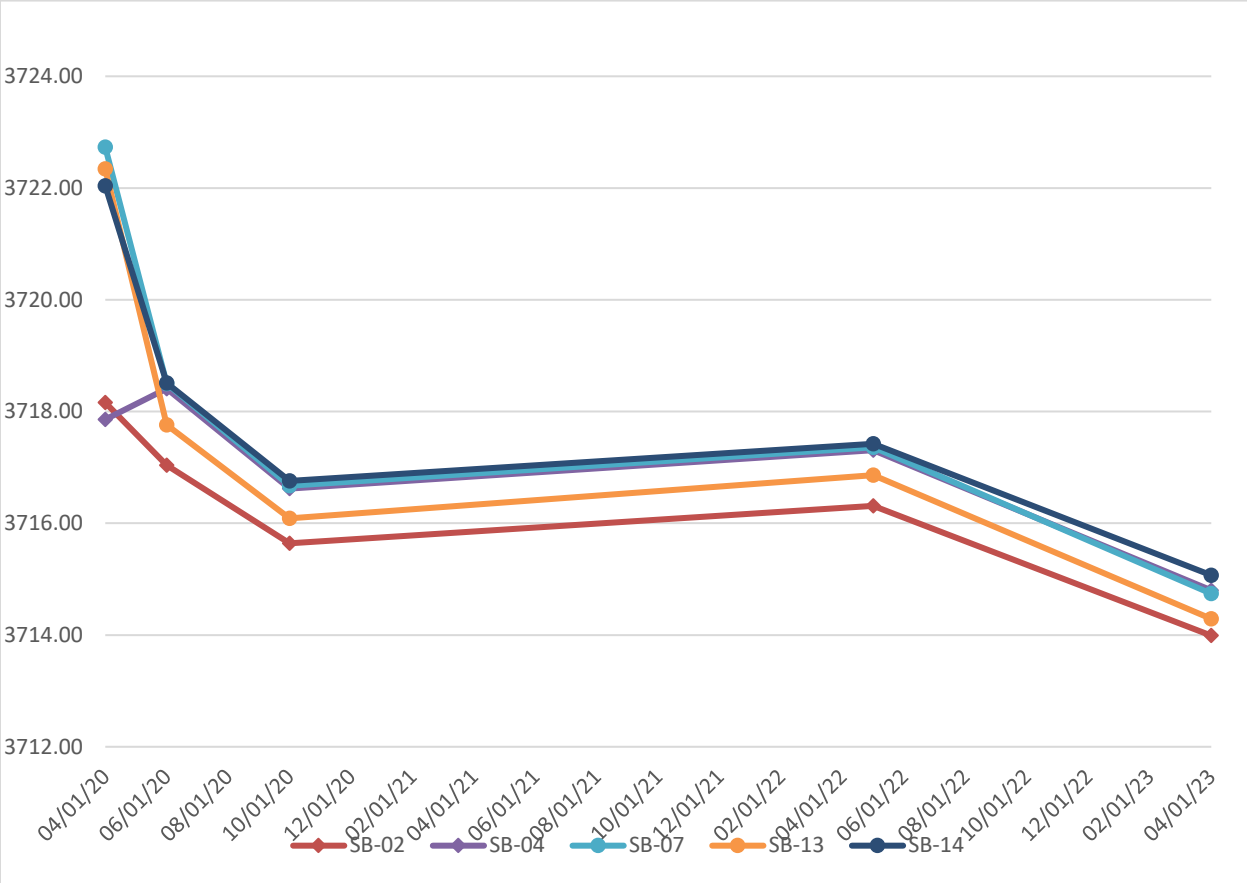


Chart 1: Shallow Well WLE vs. Time

Table 1 shows the water level measurements to date.

Taking in all the site information, location, history, and observations made, AEA believed that the water encountered may be artificial (from freshwater leak initial and subsequently, and precipitation/drainage into the excavation).

There is also the potential that it could be groundwater found above the red bed with limited thickness and then artificially "increased" by the events noted above.

To further assess the situation, AEA recommended additional wells be drilled away from the excavation, in each ordinal direction, to the top of the red bed and then screened to see if water was present in that interval.

Deeper Well Installation

In August 2021, the previous consultant proceeded to install four "deeper" monitor wells (SB-20, SB-21, SB-22, SB-23 under OSE permit L-15106 PODS 1-4); however, these wells **were not** advanced just to just the top of the red bed. (See Appendix B: Well Records).

These deeper wells were advanced through the alluvial formation and into the Triassic red bed to depths of approximately 55 feet below land surface. Each boring was completed as a monitoring well with a five-foot screen interval at the bottom of each monitoring well. The water level in each well appears to have risen in these wells. When analyzing the well records the following is noted:

SB-20 drilled to the north of the site with the following reported lithology:

DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	
FROM	TO				
0	20	20	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y	✓ N
20	~28	~8	White Silty sand w/some clay and gravel, interbedded caliche soft	✓ Y	N
28	57	29	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y	✓ N

The well is screened at 51-56 feet with bentonite seal from 2-48 feet. Water was first encountered: moist at 21 feet with a static water level at 21 feet. The well record is confusing because it states that interval 20-28 is water bearing, however, this interval was sealed with bentonite. It could be that there was water above the red bed and from the deeper screened interval.

SB-21 drilled to the west of the site with the following reported lithology:

DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)
FROM	TO			
0	30	30	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y ✓ N
30	56	26	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y ✓ N
			becomes wet at approximately 50.5	✓ Y N

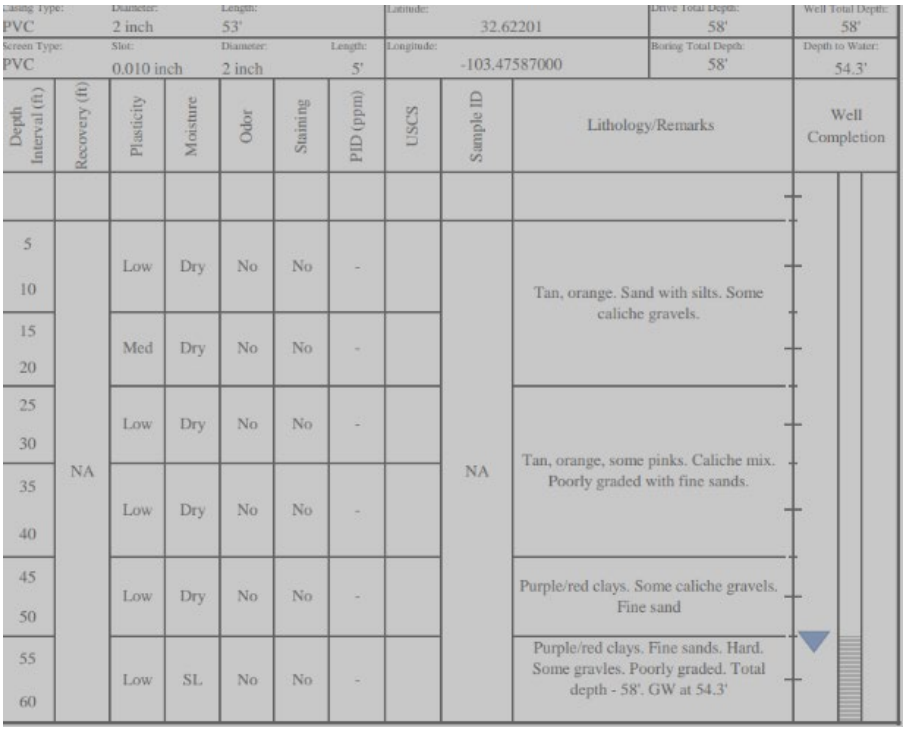
The well is screened from 50-55 feet with bentonite from 2 to 47 feet. Water was first encountered at 50.5 feet, with a static water level at 46.5 feet

SB-22 drilled to the south of the site with the following reported lithology:

DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)
FROM	TO			
0	30	30	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y ✓ N
30	56	26	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y ✓ N

The well is screened from 51-55 feet with bentonite from 48-56 feet. Water first encountered listed as moist at 28 feet and static water level of 21 feet.

AEA could not locate an OSE well record for SB-23 but a field log shows:



Casing Type:	Diameter:	Length:	Latitude:	Drive Total Depth:	Well Total Depth:
PVC	2 inch	53'	32.62201	58'	58'
Screen Type:	Slot:	Diameter:	Length:	Longitude:	Boring Total Depth:	Depth to Water:
PVC	0.010 inch	2 inch	5'	-103.47587000	58'	54.3'

Depth Interval (ft)	Recovery (ft)	Plasticity	Moisture	Odor	Staining	PID (ppm)	USCS	Sample ID	Lithology/Remarks
5	NA	Low	Dry	No	No	-		NA	Tan, orange. Sand with silts. Some caliche gravels.
10									
15		Med	Dry	No	No	-			
20									
25		Low	Dry	No	No	-			Tan, orange, some pinks. Caliche mix. Poorly graded with fine sands.
30									
35		Low	Dry	No	No	-			
40									
45		Low	Dry	No	No	-			Purple/red clays. Some caliche gravels. Fine sand
50									
55		Low	SL	No	No	-			Purple/red clays. Fine sands. Hard. Some gravles. Poorly graded. Total depth - 58'. GW at 54.3'
60									

Well Completion

This boring appears dry until around 50 feet with an installed screen from 53 -55 feet, bentonite from 0-53 feet and a water level at 54.3 feet.

These wells were all drilled via air rotary and with grab sampling. Air rotary has advantages, specifically speed, and the ability to penetrate harder sections like caliche and the red bed; however, it makes precise logging difficult. Usually when water is encountered it does become apparent with moisture at the drill string entry point or diverter.

Purple in the lithological descriptions is consistent with the Chinle red bed, as is dry/hard, and these logs when interpreted against the regional shothole records appear to show a short section of "alluvial" and then the red bed at relatively shallow depths.

SB-20 is interesting because it shows moisture at 21' which would above the apparent red bed. SB-21 doesn't show any moisture until deeper and then a slight rise in static, SB-22 shows some moisture above the red bed but is screened lower, and SB-23 shows dry until total depth and then a deep static water level.

In May 2022, AEA was contracted to survey the new monitoring wells into the existing site network (See Appendix C: Survey Reports), and gauge/ sample these wells together with the existing wells. The gauging showed differing water levels than those documented at install.

Well ID	August 2021 Well Record/Field log static water level (unknown measuring point)	May 2022 Static water level (from TOC)
SB-20	21 feet	25.90 feet
SB-21	46.5 feet	30.20 feet
SB-22	21 feet	29.43 feet
SB-23	54.3 feet	25.40 feet

Wells SB-21 and SB-23 showed a significant rise of water in the casing from installation. Wells SB-20 and 22 showed a decline of approximately 5 and 8 feet respectively. The following maps show the potentiometric surface map of the deeper wells.

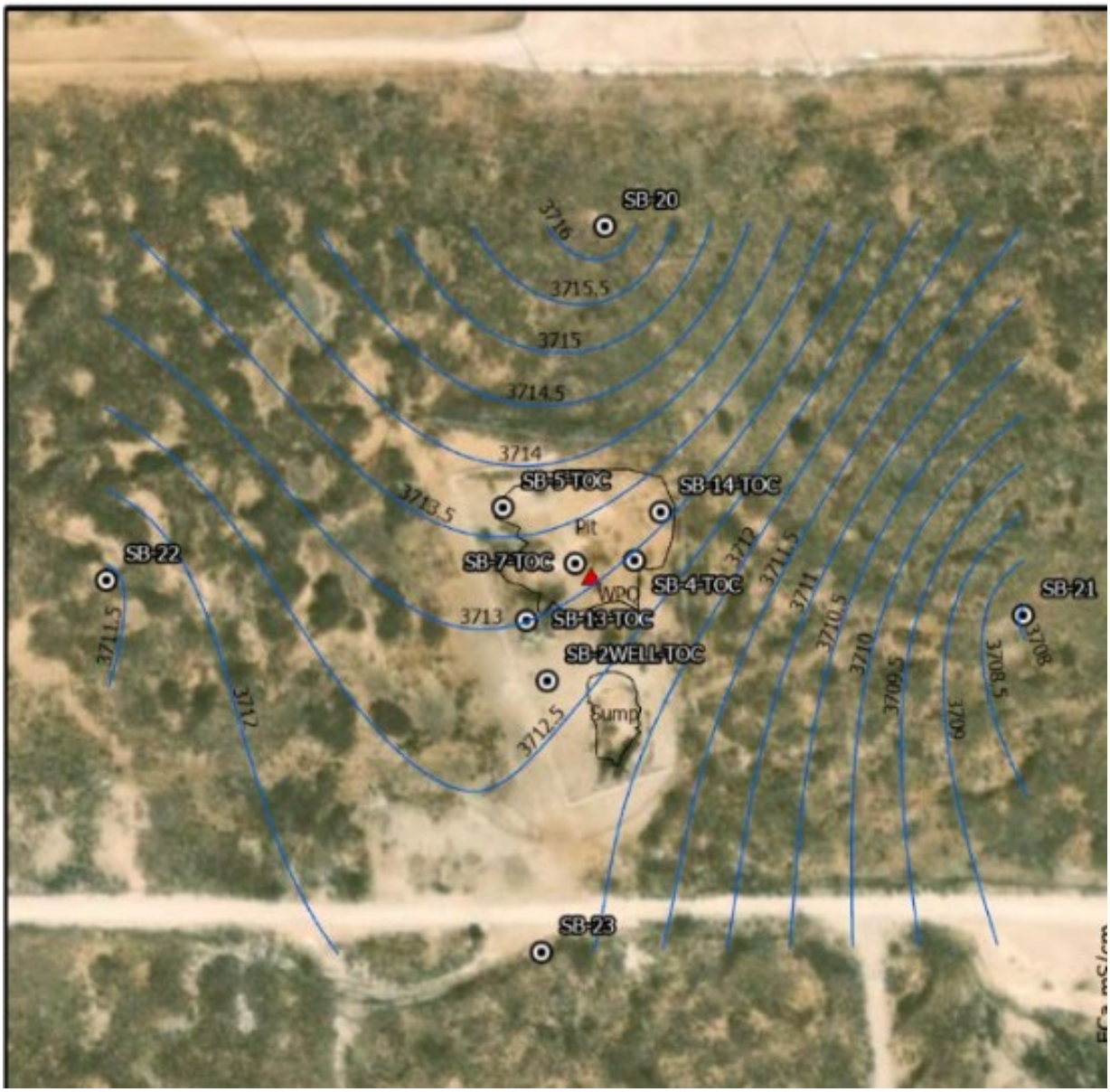


Figure 8: May 2022 Potentiometric Surface Map-Deep Wells

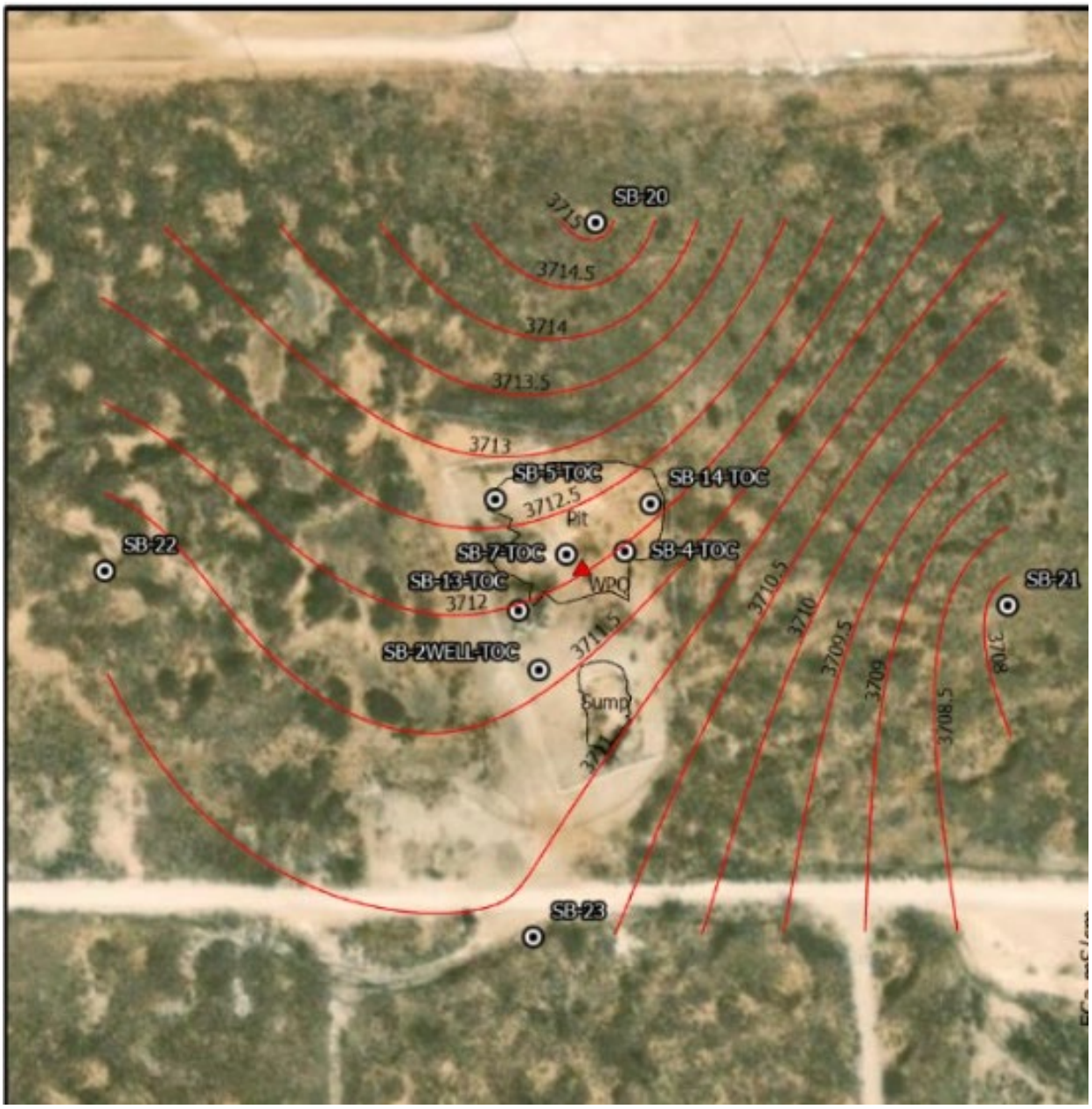


Figure 9: April 2023 Potentiometric Surface Map-Deep Wells

Mapping of the water level elevations in the deeper wells show a steep gradient to the east/southeast. As the gradient is projected across the site, the elevations observed would be below the shallow well water level elevation-by approximately 3-4 feet when compared to the May 2022 data, and approximately 1 foot when compared to the April 2023 data.

Furthermore, the observed change in water levels from 2022-2023 are not consistent when comparing shallow versus deeper wells, with a more pronounced decline in the shallow wells in that period. Chart 2 is a hydrograph of the shallow and deeper wells over time.

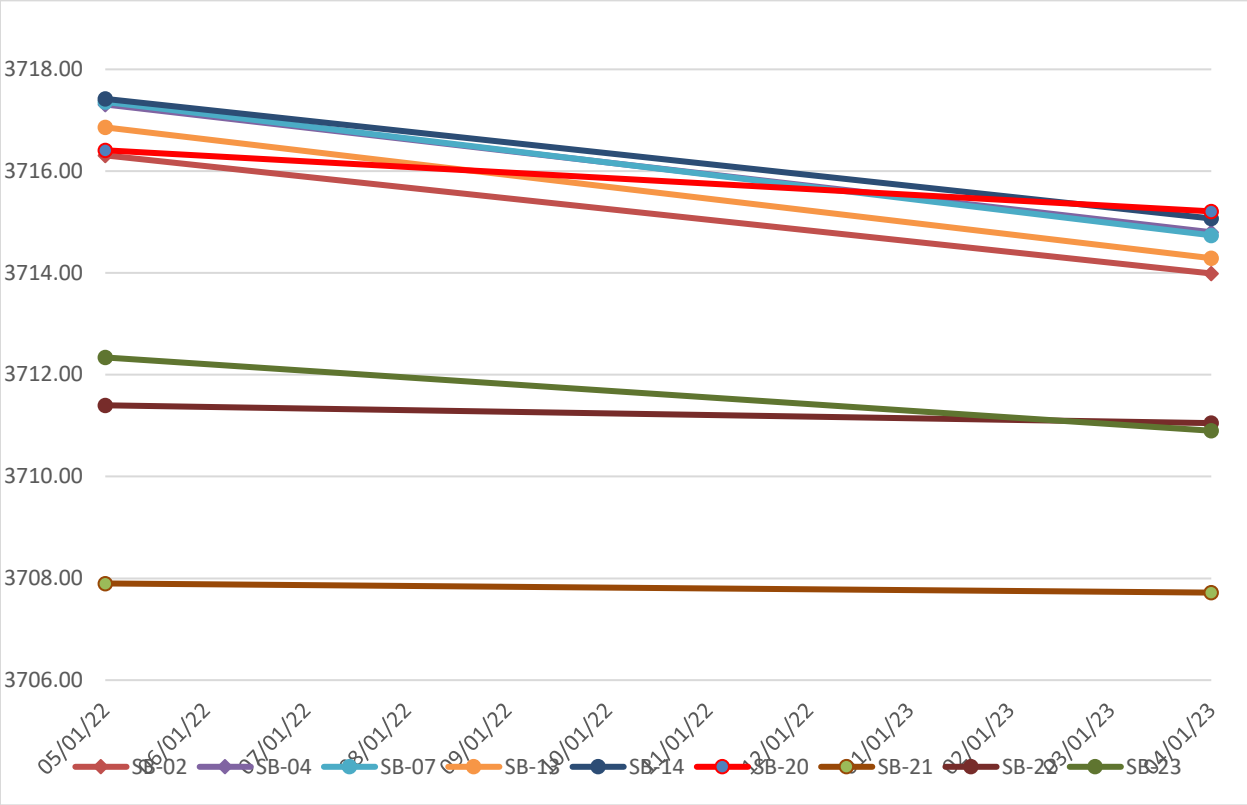


Figure 10: Shallow and Deeper well water level elevation vs. Time.

The contrast between the deeper well and shallower wells in gradient direction, slope, change in water level, and quality (below) suggests different sources.

Groundwater Sampling to Date

The previous consultant collected groundwater samples in April 2020. AEA collected groundwater samples in May 2022 and April 2023. Table 2 shows the results of the groundwater sampling to date and the analytical reports and COC documentation is included in Appendix D: Groundwater Lab Reports. Wells SB-07(all sampling events) and SB-13(first sampling event)

showed Benzene above the New Mexico Water Quality Control Commission standard of 5 µg/L. Downgradient well SB-2 has always reported benzene and other volatile compounds below laboratory reporting limits.

Chloride concentrations in the shallow site wells are highly variable but appear to be declining from 2020-2023 except in well SB-13. The chloride concentrations in the perimeter deeper wells are considerable higher than any concentrations observed in the shallower wells. The observed elevated chloride concentrations in the shallow wells cannot be readily compared to any background because there is not an optimal upgradient shallow well and not any nearby historical well within 0.5 miles of the site.

The nearest wells with some historic water quality data and believed to be completed above the red bed are L-4158 located in the SE/4NW/4SW/4 Section 5, Township 20 South, Range 35 East and L-4157 located in the NW/4SW/4SW/4 Section 6, Township 20 South, Range 35 East.

According to OSE Field schedules L-4158 has historic reported chlorides of 350 mg/L and 230 mg/L and well L-4157 has reported chlorides of 876 mg/L (see below).

Chlorides around well SB-5 were higher than any of the other nearby shallow wells. There is some concern about the installation of that well given that it was installed deeper originally and plugged back with bentonite.

Also, methylene chloride was found above the NMWQCC standard of 5 µg/L in all the deeper wells (SB-20 **187 µg/L**, SB-21 **56.6 µg**/L , SB-22 **254 µg**/L , SB-23 **54.0 µg/L**), and was below laboratory reporting limits in the all the shallow wells except well SB-5 at 3.21 µg/L.

The water sampled in the deeper wells reports chlorides levels that do not appear consistent with groundwater in southeastern New Mexico found in alluvial or Triassic formations. The water observed is above 10,000 mg/L TDS based on the chloride concentrations.

The initial sampling showed the apparent upgradient wells SB-20 (to the north) and SB-22 (to the west) as having the highest chloride concentrations 185,000 mg/L and 170,000 mg/L respectively. The April 2023 sampling event showed a large drop in SB-20 while SB-22 results declined but not as dramatically, SB-21 chloride concentration has remained consistent across both events, and SB-23 has reported the lowest concentrations in each sampling event relative to the other wells.

The deeper well water quality is concerning when considering the level of chlorides, the annular seal material used and the apparent rise in water level from depth– suggesting a confined condition. The potential for degradation of the annualar seal and upward leaking to/above the red bed, needs to be addressed.

Proposed Initial steps

The activities to date have generated data–but variable conclusions can be drawn.

Critically, the location of some of the monitoring wells impedes the resolution of the soil excavation activities approved under 19.15.29. To excavate the apparent soil contamination and prevent any additional leaching into the observed water, the wells need to be properly plugged and abandoned.

AEA recommends sampling all current site wells and plugging those wells within the excavation area to allow for the soil excavation work.

The deeper wells construction is concerning because they appear to suggest a deeper encountered water, that appears to be under pressure, and is poor quality that is not consistent with the shallow observed water. The high chloride concentrations are not compatible with the use of bentonite as an annular sealing material.

AEA recommends the deeper wells be plugged by over-gauged drilling to total depth and then plugged with a neat cement mixture designed by Baroid to deal with the high observed chlorides. Because of the initial installation of SB-5, AEA recommends it be plugged similarly to the deeper wells.

Before plugging, however, a round of sampling can collect current site conditions and guide the reinstallation of wells at the site for a full Stage 1 Abatement investigation proposal.

Groundwater Sampling of all site wells

Fluid levels in each well (SB-2, SB-4, SB-5, SB-7, SB-13, SB-20, SB-21, SB-22, SB-23) will be measured with the use of an oil-water Solinist Interface probe, or equivalent.

Following water level determination, wells will be purged using new dedicated, disposable, polyethylene bailers. A minimum of three (3) casing volumes will be removed from each well prior to sampling to ensure that a representative sample of groundwater is obtained. If a well is

purged dry, it will be sampled once the well has recharged. During purging, groundwater field parameters, including dissolved oxygen [DO], oxidation/reduction potential [ORP], electrical conductivity [EC], pH, and temperature, will be measured using a calibrated YSI Professional Plus or equivalent multi-parameter device and recorded on field datasheets. Purge and decontamination water will be containerized and properly disposed of at an appropriately registered facility.

Once purged, the wells will be sampled. To minimize volatilization and ensure sample integrity, polyethylene bottom-emptying devices will be used to transfer groundwater samples from the bailers to the appropriate laboratory-prepared sample containers. Care will be exercised to fill the container completely, without overflowing.

The samples will be labeled and preserved on ice in an insulated cooler for shipment or delivery to Enviro Tech of Farmington New Mexico. Groundwater samples will be analyzed for Chlorides using EPA Method 300.1 and volatiles using EPA Method 8260B.

Hydraulic Conductivity Test

Prior to abandonment activities, an estimate of hydraulic conductivity in a shallow well (SB-14) and a deeper well (SB-22) will be conducted consistent with USGS GWPPD 17 found in below

Plug and Abandonment of Shallow wells.

Plug and abandon SB-4, SB-7 and SB-13 with Type I/II neat cement mixed to no more than 6.0 gallons/94 lb sack and tremied from the bottom to land surface in lifts. Before plugging, AEA will file and receive approval of the plugging plan of operations with the D2 Office of the State Engineer. The abandonment approach will seal the casing at depth in the water bearing zone though the casings above will likely be destroyed during excavation activities.

Plug and Abandonment of Deeper wells

Plug and abandon SB-5, SB-20, SB-21, SB-22 and SB-23. Augers will be advanced to the total reported original depth using 4.25” (8.5” O.D.) augers and plugged with Type I/II neat cement and additives recommended by Baroid, and tremied from the bottom to land surface in lifts. Before plugging, AEA will file and receive approval of the plugging plan of operations with OSE.

Monitoring Well Installation/ Well surface completion

Excavation and backfilling of the site will be completed before the monitor well install will occur. Prior to drilling the owner/consultant will notify and seek the necessary permission from the landowner to obtain monitoring well permits from the OSE. Well drilling will be completed by a driller licensed in the State of New Mexico.

Prior to the field event, the boring locations will be white lined consistent with NM 811 standards and a “One Call” will be placed at least three days before the start of drilling. The landowner and NMOCD will be contacted at least one week before the field activities.

Three borings (SB-5R, SB-7R and SB-24) will be installed using a hollow stem auger (HSA) rig. The boreholes shall be a minimum of 4” greater than the 2.375” outside diameter of the well materials. The borings will be drilled to the top of the Chinle red bed to a total depth of approximately twenty-eight to thirty-two (28-32) feet below ground surface (ft bgs) at the locations shown on Figure 10, below. The total depth of each boring will be determined in the field by the on-site geologist/scientist. A static water level of eighteen to twenty-two (18-22) ft bgs is anticipated at the site.

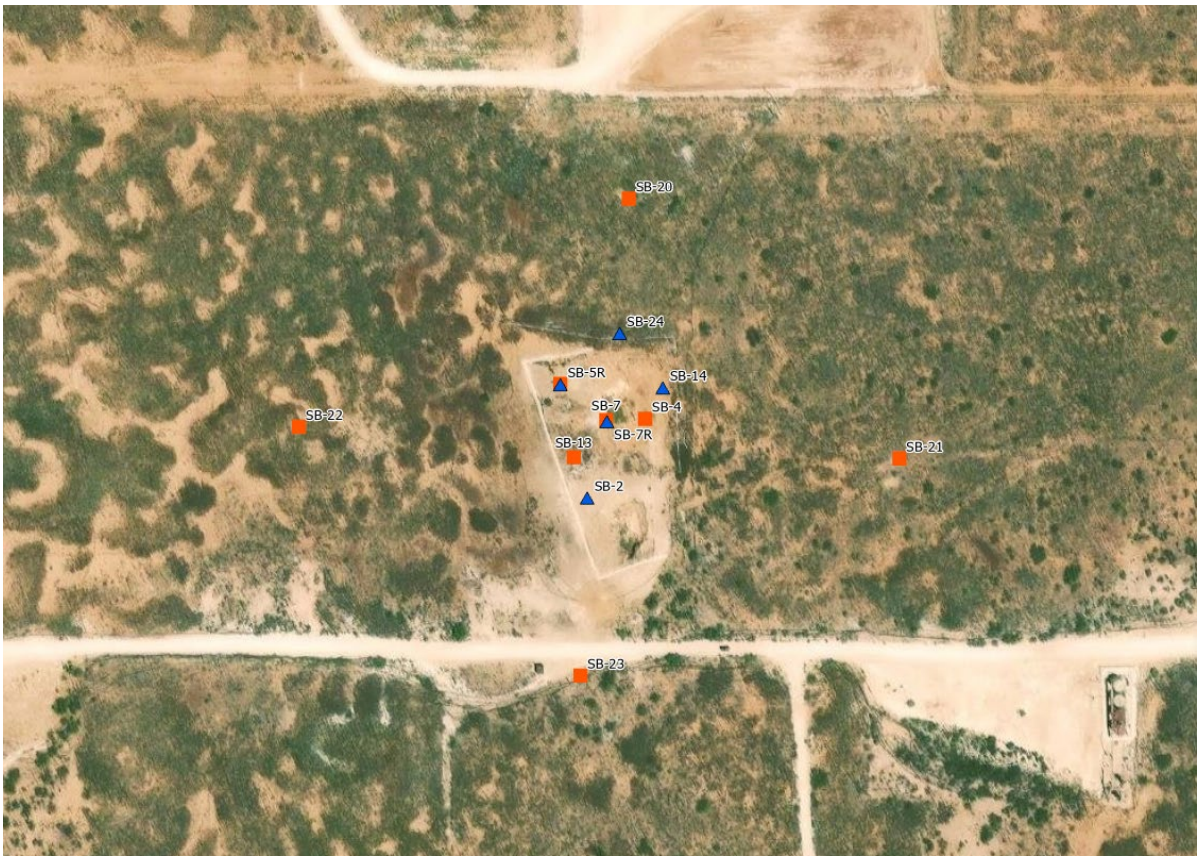


Figure 11: Proposed Plugged (orange), retained and proposed Monitoring well Locations (Blue Triangle)

Each boring will be converted to a monitoring well using 2-inch diameter well materials consisting of 15 feet of 0.010-inch-slot, Schedule 40 (SCH 40) polyvinyl chloride (PVC), machine-cut, flush-threaded well screen with blank SCH 40 PVC casing to approximately 3 feet above ground surface. Target placement of the screen will be 10-feet below the static water table and 5-feet above the static water table.

In each of the wells, a filter pack consisting of 10/20 or 12/20 silica sand will be installed in the well annulus from the bottom of the soil boring to about 2 feet above the top of the screen. Mesh-prepack screen can be substituted if needed. A minimum 3-foot-thick activated bentonite pellet seal will then be installed on top of the filter pack. The remaining annulus will be filled with a cement grout.

The above ground surface completion will consist of a 4-inch by 4-inch by 5-foot steel vault with lid, set in a 4-foot by 4-foot by 6-inch, 5000-psi Quickrete pad. The pad will slope away from the vault, and the vault will be filled with clean silica to stabilize the Sch 40 riser. A weep hole will be drilled into the base of the vault above the concrete pad, and the riser will be capped with a

Sch 40 J-plug. The monitor well ID will be etched in the concrete pad as it dries. Four bollards will be placed around the monitor well to protect it from vehicles.

Wells SB-2 and SB-14 will have their temporary completions converted to stand up completions as described above.

Well Development

After completion, and an approximate 12-hour stabilization period, the wells will be developed by mechanically surging the screen interval, followed by bailing and pumping until temperature, pH, and conductivity have stabilized and turbidity has been reduced to the extent practicable. Stabilization will be determined to be achieved after the removal of ten (10) well volumes or when turbidity readings are less than 10 NTU or discharged water is visually clear, if practicable.

Decontamination and Waste Management

A temporary decontamination "pit" will be constructed. Prior to and between borings all drill tooling will be decontaminated using a steam pressure washer.

Soil and Groundwater derived from the monitor well installation and development, and sampling purging will be containerized in either new DOT rated steel drums or a lined roll-off. All investigative derived waste will be properly disposed of at an appropriately registered facility.

Surveying

After well completion, AEA's New Mexico Land surveyor will survey the top of casing elevations referenced to US Geological Survey (USGS) datum, and state plane coordinates of the monitoring wells. Vertical measurement will be to the 0.01 foot and horizontal measurements to the 0.1 foot. Coordinates will be reported in Latitude and Longitude NAD 83 Decimal Degrees and New Mexico State Plane East Grid.

The surveyor will establish a project benchmark (if necessary, there is an existing one, but it may need to be reestablished) tied to the nearest available National Geodetic Survey Benchmark. The top of casing of each monitoring well will be tied to the project benchmark using an engineer's level loop. Horizontal position can be provided via RTK surveying equipment.

The surveyor will provide a stamped table of data showing the positional data together with an ESRI .shp and a Google Earth .kml.

Groundwater Measuring and Sampling

Prior to groundwater sampling, a minimum of one week will be allowed for the new wells to stabilize after development. Wells (SB-2, SB-5R, SB-7R, SB-14, SB-24) will be sampled using the same procedures as noted above in the groundwater sampling section.

Sample Quality Assurance and Quality Control Protocols

The following groundwater sample quality assurance and quality control (QA/QC) protocols will be used during sampling.

1) Groundwater gauging will be performed from least apparent contaminated well to most as follows favoring historic VOC detections, SB-23, SB-22, SB-21, SB-2, SB-4, SB-14,
2) This order will be modified based on results from initial to second and any subsequent sampling event.
3) At least three well volumes will be purged from each well with groundwater parameters recorded as described above.
4) New wrapped disposable bailers will be used to purge and sample each well.
5) Technicians will change gloves between wells and before sampling (after purging)
6) Samples will be collected into laboratory provided bottles with the appropriate preservative.
7) Samples from each well will be collected, labelled and placed into separate Ziploc bags before being placed into the cooler.
8) A blind duplicate will be collected from one well, marked as field duplicate 1 with no other identifying characteristics listed on the Chain of Custody.
9) A laboratory provided trip bland for VOCS will be analyzed.

Reporting

Data collected from the installation, abandonment, and sampling events will be presented in a report. The report will discuss the activities performed and summarize the observed site conditions. The following will be included in the report:

Figures

- Site Map
- Potentiometric Surface Map – illustrating the groundwater contour intervals and flow direction.
- Chloride Concentration Map(s) – showing the distribution of chlorides in the groundwater.

Tables and Graphs

- Groundwater Elevation and Field Parameters – including dates of measurement, top of casing elevations, depths to water, water level elevations, field parameters, and well completion data including total depth and screen interval
- Groundwater Analytical Results of Contaminants of Concern
- Hydraulic Conductivity Results in Shallow and Deeper Well.

Appendices

- Permitting Documentation
- Field Notes/Datasheets
- Well Logs
- Survey Data Table
- Laboratory Datasheets
- Waste Disposal Manifest

Summary

The above-proposed work will allow thorough recovery of contaminated soil under NMAC 19.25.19, address well construction concerns, and restore and improve the monitoring well network to allow for the design of a full Stage 1 Abatement investigation.

Once approved the initial work should be completed within 90 days of approval. Then the excavation can be completed, and the site restored to prevent additional loading of precipitation that may be distorting the baseline conditions.

Based on this work and collected observations, a comprehensive Stage 1 Abatement investigation plan can be submitted near the end of 2024 or first quarter 2025 with full investigation activities to occur once approved.

If you have any questions, please contact me at chris@atkinseng.com or 575.914.0174.

Sincerely

Christopher Cortez
Operations Manager

Table 1: Groundwater Elevations

Well	Date	Top Casing	Total Depth	DTW	WLE	▲WLE	Overall ▲WLE
SB-02	04/08/20	3736.29	--	17.82	3718.47	--	--
SB-02	04/16/20	3736.29	--	18.13	3718.16	-0.31	--
SB-02	06/26/20	3736.29	--	19.25	3717.04	-1.12	--
SB-02	10/22/20	3736.29	--	20.65	3715.64	-1.40	--
SB-02	05/26/22	3736.29	25.37	19.98	3716.31	0.67	--
SB-02	**04/05/23**	**3736.29**	**25.52**	**22.30**	**3713.99**	**-2.32**	-4.48
SB-04	04/08/20	3734.71	--	16.85	3717.86	--	--
SB-04	06/26/20	3734.71	--	16.30	3718.41	0.55	--
SB-04	10/22/20	3734.71	--	18.09	3716.62	-1.79	--
SB-04	05/26/22	3734.71	21.90	17.40	3717.31	0.69	--
SB-04	**04/05/23**	**3734.71**	**22.40**	**19.91**	**3714.80**	**-2.51**	-3.06
SB-05	04/08/20	3736.17	--	15.38	3720.79	--	--
SB-05	04/16/20	3736.17	--	13.96	3722.21	1.42	--
SB-05	06/26/20	3736.17	--	17.67	3718.50	-3.71	--
SB-05	10/22/20	3736.17	--	19.56	3716.61	-1.89	--
SB-05	05/26/22	3736.17	11.20	Dry	--	--	--
SB-05	**04/05/23**	**3736.17**	**26.64**	**21.43**	**3714.74**	**--**	-6.05
SB-07	04/16/20	3732.36	--	9.63	3722.73	--	--
SB-07	06/26/20	3732.36	--	13.86	3718.50	-4.23	--
SB-07	10/22/20	3732.36	--	15.69	3716.67	-1.83	--
SB-07	05/26/22	3732.36	19.10	15.00	3717.36	0.69	--
SB-07	**04/05/23**	**3732.36**	**19.20**	**17.62**	**3714.74**	**-2.62**	-7.99

Well	Date	Top Casing	Total Depth	DTW	WLE	▲WLE	Overall ▲WLE
SB-13	04/16/20	3737.91	--	15.57	3722.34	--	--
SB-13	06/26/20	3737.91	--	20.15	3717.76	-4.58	--
SB-13	10/22/20	3737.91	--	21.82	3716.09	-1.67	--
SB-13	05/26/22	3737.91	27.10	21.05	3716.86	0.77	--
SB-13	**04/05/23**	**3737.91**	**27.20**	**23.62**	**3714.29**	**-2.57**	-8.05
SB-14	04/16/20	3738.27	--	16.23	3722.04	--	--
SB-14	06/26/22	3738.27	--	19.76	3718.51	-3.53	--
SB-14	10/22/22	3738.27	--	21.51	3716.76	-1.75	--
SB-14	05/26/22	3738.27	27.07	20.85	3717.42	0.66	--
SB-14	**04/05/23**	**3738.27**	**27.00**	**23.20**	**3715.07**	**-2.35**	-6.97
SB-20	05/26/22	3741.11	60.20	24.70	3716.41	--	--
SB-20	**04/05/23**	**3741.11**	**60.25**	**25.90**	**3715.21**	-1.20	-1.20
SB-21	05/26/22	3737.92	60.20	30.02	3707.90	--	--
SB-21	**04/05/23**	**3737.92**	**60.20**	**30.20**	**3707.72**	-0.18	-0.18
SB-22	05/26/22	3740.48	60.18	29.08	3711.40	--	--
SB-22	**04/05/23**	**3740.48**	**60.30**	**29.43**	**3711.05**	-0.35	-0.35
SB-23	05/26/22	3736.30	61.25	23.96	3712.34	--	--
SB-23	**04/05/23**	**3736.30**	**61.20**	**25.40**	**3710.90**	-1.44	-1.44

Table 2: Groundwater Analytical

Well	Date	Benzene (µg/L)	Toulene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)	ORO (mg/L)	Chloride (mg/L)	Nitrates (mg/L)	Sampler
SB-02	04/16/20	<2.0	<2.0	<2.0	<2.0	<2.50	<2.50	<2.50	1,810	--	HRL
SB-02	05/26/22	<1.00	<1.00	<1.00	<1.00	<0.100	<1.00	<2.00	112	--	AEA
SB-02	**04/05/23**	**<1.00**	**<1.00**	**<1.00**	**<1.00**	**--**	**--**	**--**	**81.3**	**<5.00**	AEA
SB-04	05/26/22	<1.00	<1.00	<1.00	<1.00	<0.100	<1.00	<2.00	28.7	--	AEA
SB-04	**04/05/23**	**<1.00**	**<1.00**	**<1.00**	**<1.00**	**--**	**--**	**--**	**86.2**	**<0.250**	AEA
SB-05	04/16/20	<2.0	<2.0	<2.0	<2.0	<2.50	<2.50	<2.50	12,000	--	HRL
SB-05	**04/05/23**	**2.61**	**<1.00**	**<1.00**	**<1.00**	**--**	**--**	**--**	**11,300**	**6.44**	AEA
SB-07	04/16/20	20.2	<2.0	14.3	9.16	<2.50	<2.50	<2.50	3,470	--	HRL
SB-07	05/26/22	5.09	<1.00	8.44	<1.00	0.136	<1.00	<2.00	30.6	--	AEA
SB-07	**04/05/23**	**9.28**	**<1.0**	**5.34**	**<1.0**	**--**	**--**	**--**	**27**	**<0.500**	AEA
SB-13	04/16/20	25.4	<2.0	<2.0	<2.0	<2.50	<2.50	<2.50	928	--	HRL
SB-13	05/26/22	<1.00	<1.00	<1.00	<1.00	<0.100	<1.00	<2.00	188	--	AEA
SB-13	**04/05/23**	**<1.00**	**<1.00**	**<1.00**	**<1.00**	**--**	**--**	**--**	**424**	**<2.50**	AEA

Well	Date	Benzene (µg/L)	Toulene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	GRO (mg/L)	DRO (mg/L)	ORO (mg/L)	Chloride (mg/L)	Nitrates (mg/L)	Sampler
SB-14	04/16/20	<2.0	<2.0	<2.0	<2.0	<2.50	<2.50	<2.50	6,840	--	HRL
SB-14	05/26/22	<1.00	<1.00	<1.00	<1.00	<0.100	<1.00	<2.00	711	--	AEA
SB-14	**04/05/23**	**<1.00**	**<1.00**	**<1.00**	**<1.00**	--	--	--	**388**	**<5.00**	AEA
SB-17	04/16/20	2.9	<2.0	5.65	13.5	<2.50	<2.50	<2.50	17,300	--	HRL
SB-20	05/26/22	1.56	13.0	<1.00	<1.00	<0.100	<1.00	<2.00	185,000	--	AEA
SB-20	**04/05/23**	**<5.00**	**<5.00**	**<5.00**	**<5.00**	--	--	--	**61,700**	**<250**	AEA
SB-21	05/26/22	<1.00	5.77	<1.00	<1.00	<0.100	<1.00	<2.00	96,800	--	AEA
SB-21	**04/05/23**	**<5.00**	**<5.00**	**<5.00**	**<5.00**	--	--	--	**94,400**	**<250**	AEA
SB-22	05/26/22	<1.00	17.5	<1.00	<1.00	<0.100	<1.00	<2.00	170,000	--	AEA
SB-22	**04/05/23**	**<5.00**	**<5.00**	**<5.00**	**<5.00**	--	--	--	**124,000**	**<250**	AEA
SB-23	05/26/22	<1.00	3.09	<1.00	<1.00	<0.100	<1.00	<2.00	76,100	--	AEA
SB-23	**04/05/23**	**<5.00**	**<5.00**	**<5.00**	**<5.00**	--	--	--	**25,700**	**<250**	AEA

Appendix A: NMWRRS Query

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 6416	q 4	Sec	Tws	Rng	X	Y
L 14553	L	COM	740	L & K RANCH	LE	L 14553 POD12	20F9C				2	2 4	28	19S	35E		

Record Count: 1

PLSS Search:

Section(s): 28 **Township:** 19S **Range:** 35E

Sorted by: File Number

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters)

(acre ft per annum)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 6416	q 4	q Sec	Tws	Rng	X	Y
L 14553	L	COM	740	L & K RANCH	LE	L 14553 POD14	20F9E				2	2	2 29	19S	35E	643329	3612155

Record Count: 1

PLSS Search:

Section(s): 29 **Township:** 19S **Range:** 35E

Sorted by: File Number

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 6416	q 4	q 2	Sec	Tws	Rng	X	Y
RA 12222	RA	EXP	0	RONALD DEAN HOUGHTALING	ED	RA 12222 POD5					2	4	2	30	19S	35E	545279	3610853

Record Count: 1

PLSS Search:

Section(s): 30 **Township:** 19S **Range:** 35E

Sorted by: File Number

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 31 **Township:** 19S **Range:** 35E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y
L 14876	L	MON	0	ARMSTRONG ENERGY	LE	L 14876 POD1	NA				2 1 2	32	19S	35E	643011	3610472
					LE	L 14876 POD10				Shallow	2 1 2	32	19S	35E	642998	3610500
					LE	L 14876 POD11				Shallow	2 1 2	32	19S	35E	642989	3610522
					LE	L 14876 POD12				Shallow	2 1 2	32	19S	35E	642973	3610515
					LE	L 14876 POD13				Shallow	2 1 2	32	19S	35E	642986	3610500
					LE	L 14876 POD14				Shallow	2 1 2	32	19S	35E	643023	3610529
					LE	L 14876 POD2					2 1 2	32	19S	35E	642991	3610483
					LE	L 14876 POD3					2 1 2	32	19S	35E	643014	3610535
					LE	L 14876 POD4					2 1 2	32	19S	35E	643015	3610516
					LE	L 14876 POD5				Shallow	2 1 2	32	19S	35E	642992	3610517
					LE	L 14876 POD6					2 1 2	32	19S	35E	643007	3610516
					LE	L 14876 POD7				Shallow	2 1 2	32	19S	35E	643025	3610515
					LE	L 14876 POD8				Shallow	2 1 2	32	19S	35E	642982	3610507
					LE	L 14876 POD9				Shallow	2 1 2	32	19S	35E	643000	3610508
L 15106	L	MON	0	ARMSTRONG ENERGY	LE	L 15106 POD1	NA			Shallow	2 1 2	32	19S	35E	643002	3610606
					LE	L 15106 POD2				Shallow	1 2 2	32	19S	35E	643119	3610506
					LE	L 15106 POD3				Shallow	2 1 2	32	19S	35E	642875	3610512
					LE	L 15106 POD4					4 1 2	32	19S	35E	643003	3610389

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y

Record Count: 18

PLSS Search:

Section(s): 32 **Township:** 19S **Range:** 35E

Sorted by: File Number

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

No PODs found.

PLSS Search:

Section(s): 33 **Township:** 19S **Range:** 35E

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y
L 04627	L	STK	3	THELMA A. LINAM	LE	L 04627					2 2	04	20S	35E	644889	3608839*
L 14552	L	COM	315	NUWATER RESOURCES LLC	LE	L 14552 POD10	20F19				4 4 3	04	20S	35E	644200	3607516*
				NUWATER RESOURCES LLC	LE	L 14552 POD11	20F1A				4 2 3	04	20S	35E	644252	3607980
				NUWATER RESOURCES LLC	LE	L 14552 POD12	20F1B			Artesian	2 3 2	04	20S	35E	644534	3608505
				NUWATER RESOURCES LLC	LE	L 14552 POD13	20F1C				3 4 4	04	20S	35E	644804	3607531*
				NUWATER RESOURCES LLC	LE	L 14552 POD8	20F18				4 1 3	04	20S	35E	643792	3607911*

Record Count: 6

PLSS Search:

Section(s): 4 **Township:** 20S **Range:** 35E

Sorted by: File Number

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 6416	q 4	Sec	Tws	Rng	X	Y
L 04158	L	DOL	3	VIRGIL LINAM	LE	L 04158				Shallow	2	4	05	20S	35E	643290	3608008*
L 14552	L	COM	315	NUWATER RESOURCES LLC	LE	L 14552 3	NA				1	1	05	20S	35E	641880	3608883
				NUWATER RESOURCES LLC	LE	L 14552 POD3	20F17				1	1	05	20S	35E	641880	3608883

Record Count: 3

PLSS Search:

Section(s): 5 **Township:** 20S **Range:** 35E

Sorted by: File Number

***UTM location was derived from PLSS - see Help**

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

(acre ft per annum)

(R=POD has been replaced and no longer serves this file, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Well Tag	Code	Grant	Source	q 6416	q 4	Sec	Tws	Rng	X	Y
L 04157	L	DOL	3	VIRGIL LINAM	LE	L 04157				Shallow	3	3	06	20S	35E	640483	3607561*
L 14097	L	STK	3	L&K RANCH LLC	LE	L 14097 POD1				Shallow	1	3	3	06	20S	35E	638740	3718500

Record Count: 2

PLSS Search:

Section(s): 6 **Township:** 20S **Range:** 35E

Sorted by: File Number

***UTM location was derived from PLSS - see Help**

Appendix B: Well Records

OSE DII JUN 16 2020 AM 9:20

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OSE DII JUN 16 2020 AM 9:20

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1	SB-1	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	21.2736	N
	LONGITUDE	103	28	32.2494	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/8/2020	4/8/2020	Not Applicable	25	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	25	6.25	Not Installed	Not Installed	Not Installed	Not Installed	N/A

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
		6.25	Not Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 1	TRN NO. 670717	
LOCATION 19S-35E-32 2.1.2		WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	13	13	Pink tan fine sand with minor silt and minor medium sand	Y ✓ N	
13	25	12	Dark red clay with angular coarse gravel, minor salt staining	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Core barrel drive 27 feet bgl; TD auger 25 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.05 10:13:11 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/5/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14876	POD NO. 1	TRN NO. 670717	
LOCATION 2.1.2 19S-35E-32		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OSE DII JUN 16 2020 AM 9:21

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD2	SB-2	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	21.633	N
	LONGITUDE	103	28	32.988	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/8/2020	4/8/2020	Not Applicable	≥ 37	28

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 17.82

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	15	6.25	Blank PVC	Flush Thread	2.0	0.154	N/A
15	25	6.25	Slotted PVC	Flush Thread	2.0	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6.25	Native clean fill	0.2	Shovel
2	13	6.25	Bentonite	1.1	Pour
13	25	6.25	10/20 Clean Silica Sand	1.2	Pour
25	35	6.25	Bentonite	1	Pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 2	TRN NO. 670717	
LOCATION 19S-35E-32	2.1.2	WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	13	13	Dark orange, dry silt and clay with fine sand	Y ✓ N	
13	23	10	Buff-tan color silty fine sand with minor gravel; moist, minor salt crust	✓ Y N	
23	28	5	Pale pink/red silty fine sand with some gravel; damp soil	Y ✓ N	
28	37	9	Dark red/purple clay with light grey clay and black angular inclusions	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Core barrel drive to 37 feet bgl, Auger to 35 feet bgl, plug back to 25 feet bgl with bentonite and set well

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 09:44:06 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14876	POD NO. 2	TRN NO. 670717	
LOCATION 21.2 19S-35E-32		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD3	SB-3	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	23.3004	N
	LONGITUDE	103	28	32.1096	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/8/2020	4/8/2020	Not Applicable	40	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			Not Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
		6.25	Not Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 3	TRN NO. 670717	
LOCATION 19S-35E-32	2.1.2	WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	18	18	Buff to tan and pale orange color fine sand with silt	Y ✓ N	
18	24	6	Red-orange fine sand with minor silt and medium to coarse sand	Y ✓ N	
24	40	16	Dark red/dark purple clay with light grey clay and angular black inclusions	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Core Barrel 42 feet bgl
TD Auger 40 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 09:43:10 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14876	POD NO. 3	TRN NO. 670717
LOCATION 2.1.2 19S.35E.32	WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD4	SB-4	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.695	N
	LONGITUDE	103	28	32.0442	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/9/2020	4/9/2020	Not Applicable	25	22

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 16.85

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	10	6.25	Blank PVC	Flush Thread	2.0	0.154	None
10	20	6.25	Factory Slotted PVC	Flush Thread	2.0	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6.25	Clean native fill	0.2	Shovel
2	8	6.25	Bentonite	0.6	Pour
8	20	6.25	Clean 10/20 Silica Sand	1.2	Pour
20	25	6.25	Bentonite	1.1	Pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 4	TRN NO. 670717
LOCATION 19S.35E.32 2.1.2	WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	13	13	Orange/pink/buff-colored silty fine sand with minor medium sand and gravel	Y ✓ N	
13	22	9	Terra cotta orange color well-graded sand with clay	✓ Y N	
22	25	3	Dark red/deep purple clay with minor light gray clay and black angular inclusion	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Core Barrel Drive to 27 feet bgl
TD Auger 25 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 09:45:13 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14876	POD NO. 4	TRN NO. 670717	
LOCATION 2.12 19S-35E-32		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

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OSE DII JUN 16 2020 AM 9:21

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD5	SB-5	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	23.1996	N
	LONGITUDE	103	28	33.3876	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/9/2020	4/9/2020	Not Applicable	55	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 15.38

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	15	6.25	Blank PVC	Flush Thread	2.0	0.154	None
15	25	6.25	Factory Slotted PVC	Flush Thread	2.0	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6.25	Clean native fill	0.2	Shovel
2	13	6.25	Bentonite	1.1	Pour
13	25	6.25	Clean 10/20 Silica Sand	1.2	Pour
25	55	6.25	Bentonite	6.4	Pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 5	TRN NO. 670717	
LOCATION 2-1-2 19S-35E-32		WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	3	3	Well-graded sand with gravel and minor silt	Y ✓ N	
3	23	20	Buff to orange color silty fine sand with medium and coarse sand	✓ Y N	
23	55	32	Purple hard clay with light gray clay and black angular inclusions	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Auger to 55 feet bgl, plug back to 25 feet bgl with bentonite then set well, TD well 25 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 09:46:01 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-14876	POD NO.	S	TRN NO.	670707
LOCATION	2-1-2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OSE DII JUN 16 2020 PM 3:21

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD7	SB-7	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.677	N
	LONGITUDE	103	28	32.6568	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/9/2020	4/9/2020	Not Applicable	30	18.75

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 9.63

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	5	6.25	Blank PVC	Flush Thread	2.0	0.154	None
5	20	6.25	Factory Slotted PVC	Flush Thread	2.0	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6.25	Clean native fill	0.2	Shovel
2	3	6.25	Bentonite	0.1	Pour
3	20	6.25	Clean 10/20 Silica Sand	1.7	Pour
20	30	6.25	Bentonite	0.99	Pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 7	TRN NO. 670717
LOCATION 21.2 19S.35E.32.	WELL TAG ID NO. NA	PAGE 1 OF 2

OSE DIT JUN 16 2020 AM 9:21

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	6	6	Silty fine sand with minor medium sand	Y ✓ N	
6	14	8	Well-graded sand with silt, some gravel	✓ Y N	
14	15	1	Light brown clay with well-graded sand and gravel	Y ✓ N	
15	16	1	Orange brown well-graded sand with silt, hard, dry	Y ✓ N	
16	18	2	Pink-orange well-graded sand with calcite chunks > 1 inch	Y ✓ N	
18	20	2	Dark red-orange well-graded sand with clay	Y ✓ N	
20	25	5	Orange and buff-colored well-graded sand with gravel and angular calcite cobble	Y ✓ N	
25	32	7	Dry purple clay with minor light gray to white clay inclusions and black gravel i	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: Drive to 32 feet; Auger to 30 feet; plug boring back to 20 feet then set well

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 09:47:01 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-17876	POD NO. 7	TRN NO. 690717	
LOCATION 21.2 19S.35E.32		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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OSE DII JUN 16 2020 AM 9:21

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD8	SB-8	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.4826	N
	LONGITUDE	103	28	32.469	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/10/2020	4/10/2020	Not Applicable	25	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	8	TRN NO.	670717
LOCATION	21.2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DII JUN 16 2020 AM 9:21

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	8	8	Red orange and light gray silt with fine sand and some coarse angular sand	Y ✓ N	
8	18	10	Pale orange to terra-cotta color orange fine sand with silt and gravel	Y ✓ N	
18	23	5	Dark orange and white sand with large calcite gravel pieces	✓ Y N	
23	27	4	Dark purple clay and fine sand with white and light gray clay inclusions	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:05:00 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-14874	POD NO.	8	TRN NO.	670717	
LOCATION	21.2 : 19S-35E-32			WELL TAG ID NO.	NA	PAGE 2 OF 2

WELL RECORD & LOG

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OSE DII JUN 16 2020 AM 9:22

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD9	SB-9	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.2492	N
	LONGITUDE	103	28	32.3184	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/10/2020	4/10/2020	Not Applicable	30	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
		6.25	None Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	9	TRN NO.	670771
LOCATION	2.1.2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DII JUN 15 2020 AM 9:22

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	13	13	Light brown to orange fine sand with minor silt and coarse sand and gravel	Y ✓ N	
13	18	5	Orange/light brown well-graded sand with minor silt and gravel	Y ✓ N	
18	25	7	Orange/red fine sand with minor medium and coarse sand and silt and white calc	Y ✓ N	
25	32	7	Brick red to purple clay with minor fine, medium, and coarse sand and light gray	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 30 feet bgl; TD core barrel drive 32 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:05:31 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-14876	POD NO. 9	TRN NO. 670719	
LOCATION	2-1-2	19S-35E-32	WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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OSE DII JUN 16 2020 AM 9:22

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD10	SB-10	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.1772	N
	LONGITUDE	103	28	32.7318	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/10/2020	4/10/2020	Not Applicable	20	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	10	TRN NO.	670717
LOCATION	2.1.2	19S-35E-32		WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DII JUN 16 2020 AM 9:22

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	18	18	Tan and orange colored well-graded sand with minor gravel	Y ✓ N	
18	22	4	Dark orange/red fine and medium silty sand with white inclusions	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 20 feet bgl; TD core barrel drive 22 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:06:13 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14876	POD NO. 10	TRN NO. 670717	
LOCATION 21.2 19S.35E.32		WELL TAG ID NO. NA	PAGE 2 OF 2

E DII JUN 16 2020 AM 9:22

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD11	SB-11	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.9182	N
	LONGITUDE	103	28	33.0522	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/14/2020	4/14/2020	Not Applicable	25	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-14876	POD NO. 11	TRN NO. 670117	
LOCATION 21.2 19S 35E-32		WELL TAG ID NO. NA	PAGE 1 OF 2

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4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	18	18	Orange well-graded sand with silt	Y ✓ N	
18	24	6	Orange and buff-colored well-graded sand with gravel	Y ✓ N	
24	27	4	Very hard dark purple clay with fine and medium sand and light grey calcite incl	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 25 feet bgl; TD core barrel drive 27 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:06:50 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14874	POD NO. 11	TRN NO. 670917	
LOCATION 21.2 19S-35E-32		WELL TAG ID NO. NA	PAGE 2 OF 2

OSE DIT JUN 16 2020 AM 9:22

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD12	SB-12	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.6878	N
	LONGITUDE	103	28	33.6606	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/15/2020	4/15/2020	Not Applicable	24	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			None Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
			None Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	12	TRN NO.	670717
LOCATION	21.2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DIT JUN 16 2020 AM 8:22

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	8	8	Fine sand with minor coarse sand	Y ✓N	
8	10	2	Light brown well-graded sand with gravel and white clay chunks	Y ✓N	
10	19	9	Buff-colored well-graded sand with minor silt	Y ✓N	
19	24	5	Dark orange medium sand and fine sand with minor silt and gravel	✓Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 20 feet bgl; TD core barrel drive 24 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:07:23 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-14876	POD NO.	12	TRN NO.	670717	
LOCATION	2.1.2 19S-35E-32			WELL TAG ID NO.	NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

OSE DII JUN 16 2020 AM 9:23

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD13	SB-13	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	22.1772	N
	LONGITUDE	103	28	33.1716	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/15/2020	4/15/2020	Not Applicable	25	18.35

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 17.09

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	10	6.25	Blank PVC	Flush Thread	2	0.154	NA
10	25	6.25	Factory Slotted PVC	Flush Thread	2	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6.25	Clean native backfill	0.2	Shovel
2	8	6.25	Bentonite	0.6	Pour
8	25	6.25	Clean 10/20 Sand	1.7	Pour

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	13	TRN NO.	670717
LOCATION	2.1.2 19S.35E.32			WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DIT JUN 16 2020 AM 9:23

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	14	14	Light brown and orange well-graded sand with minor gravel	Y ✓ N	
14	24	10	Orange fine sand with silt and minor medium sand	✓ Y N	
24	27	3	Orange and buff-colored well-graded sand with large calcite and white clay inclu	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 25 feet bgl; TD core barrel drive 27 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Digitally signed by Mark Mumby
DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US
Date: 2020.06.09 10:07:56 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-14874	POD NO. 13	TRN NO. (670717)	
LOCATION 2.1.2 19S-35E-32		WELL TAG ID NO. NA	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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OSE DII JUN 16 2020 AM 9:23

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD14	SB-14	L 14876

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	32	37	23.1168	N
	LONGITUDE	103	28	31.7562	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
4/15/2020	4/15/2020	Not Applicable	25	Not Encountered

COMPLETED WELL IS: ☐ ARTESIAN ☑ DRY HOLE ☐ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): Not Encountered

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☑ OTHER – SPECIFY: Hollow Stem Auger

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
			Not Installed				

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
		6.25	Not Installed		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO.	L-14876	POD NO.	14	TRN NO.	670717
LOCATION	2-1-2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 1 OF 2

OSE DIT JUN 16 2020 AM 8:23

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	13	13	Tan to orange well-graded sand with minor silt	Y ✓ N	
13	19	6	Pink to pale-buff colored silty fine sand	Y ✓ N	
19	24	5	Orange to slightly tank well-graded sand with minor silt	✓ Y N	
24	27	3	Brick red color clay with medium and cs well-graded sand and calcite chunks	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: Not Applicable

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST: TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION: TD Auger 25 feet bgl; TD core barrel drive 27 feet bgl

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Kalvin Padilla

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Mark E. Mumby — Digitally signed by Mark Mumby, DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US, Date: 2020.06.09 10:09:09 -06'00'

Mark Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

6/9/2020 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-14876	POD NO.	14	TRN NO.	670779
LOCATION	21.2 19S-35E-32			WELL TAG ID NO.	NA

PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD1	SB20	L-15106

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	103	28	32.51	N
	LONGITUDE	32	37	25.62	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
8/23/2021	8/23/2021	56	57	Moist at ~21 feet

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 21

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	51	6	Blank PVC	Flush Thread	2	0.154	N/A
51	56	6	Pre-Pack Slotted PVC	Flush Thread	2	0.154	0.010

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6	Concrete	0.2	Pour
2	48	6	Bentonite	4.05	Tremie
48	57	6	10-20 Prepack and bagged clean silica sand	0.81	Tremie

OSE DIT SEP 23 2021 PM 2:24

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-15106	POD NO. 1	TRN NO. 688109	
LOCATION 19S-35E-32 212		WELL TAG ID NO. N/A	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	20	20	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y ✓ N	
20	~28	~8	White Silty sand w/some clay and gravel, interbedded caliche soft	✓ Y N	
28	57	29	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: N/A

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

OSE DIT SEP 28 2021 PM2:24

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Jesse Cote

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Mark E Mumby — Digitally signed by Mark Mumby DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US Date: 2021.09.23 10:39:25 -06'00'

Mark E. Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

9/23/2021 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-15106	POD NO. 1	TRN NO. 688109	
LOCATION 19S-35E-32 212		WELL TAG ID NO. N/A	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD2	SB21	L-15106

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	103	28	28.08	N
	LONGITUDE	32	37	22.33	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHJIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
8/20/2021	8/21/2021	55	56	50.5

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 46.5

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	50	6	Blank PVC	Flush Thread	2	0.154	N/A
50	55	6	Pre-Pack Slotted PVC	Flush Thread	2	0.154	0.010

OSE DII SEP 28 2021 PM 2:24

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6	Concrete	0.2	Pour
2	47	6	Bentonite	4.04	Tremie
47	56	6	10-20 Prepack and bagged clean silica sand	0.81	Tremie

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-15106	POD NO. 2	TRN NO. 688109	
LOCATION 19S-35E-32-122		WELL TAG ID NO. N/A	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	30	30	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y ✓ N	
30	56	26	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y ✓ N	
			becomes wet at approximately 50.5	✓ Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: N/A

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

OSE DIT SEP 28 2021 PM2:24

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Jesse Cote

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Mark E. Mumby — Digitally signed by Mark Mumby DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US Date: 2021.09.23 10:39:25 -06'00'

Mark E. Mumby — 9/23/2021

SIGNATURE OF DRILLER / PRINT SIGNEE NAME — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO. L-15106	POD NO. 2	TRN NO. 688109	
LOCATION 195-35E-32 122		WELL TAG ID NO. N/A	PAGE 2 OF 2

WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

1. GENERAL AND WELL LOCATION

OSE POD NO. (WELL NO.)	WELL TAG ID NO.	OSE FILE NO(S).
POD3	SB22	L-15106

WELL OWNER NAME(S)	PHONE (OPTIONAL)
Armstrong Energy	

WELL OWNER MAILING ADDRESS	CITY	STATE	ZIP
P.O. Box 1973	Roswell	NM	88202

WELL LOCATION (FROM GPS)		DEGREES	MINUTES	SECONDS	
	LATITUDE	103	28	37.44	N
	LONGITUDE	32	37	22.63	W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND

* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE

West Pearl Queen

2. DRILLING & CASING INFORMATION

LICENSE NO.	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
1789	Mark Mumby	HRL Compliance Solutions, Inc.

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
8/21/2021	8/23/2021	55	56	Moist at ~28 feet

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☑ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 21

DRILLING FLUID: ☑ AIR ☐ MUD ADDITIVES – SPECIFY:

DRILLING METHOD: ☑ ROTARY ☐ HAMMER ☐ CABLE TOOL ☐ OTHER – SPECIFY:

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	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)
0	51	6	Blank PVC	Flush Thread	2	0.154	N/A
51	56	6	Pre-Pack Slotted PVC	Flush Thread	2	0.154	0.010

OSE DII SEP 28 2021 PM2:24

3. ANNULAR MATERIAL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
0	2	6	Concrete	0.2	Pour
2	48	6	Bentonite	4.05	Tremie
48	56	6	10-20 Prepack and bagged clean silica sand	0.81	Tremie

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 04/30/19)

FILE NO. L-15106	POD NO. 3	TRN NO. 688109	
LOCATION 19S-35E-32 212		WELL TAG ID NO. N/A	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL

DEPTH (feet bgl) FROM	DEPTH (feet bgl) TO	THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES **(attach supplemental sheets to fully describe all units)**	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER-BEARING ZONES (gpm)
0	30	30	Reddish Orange Silty sand w/some clay and gravel, occasional caliche soft	Y ✓ N	
30	56	26	Reddish Orange to purple poorly graded fine sand and caliche, dry hard	Y ✓ N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	
				Y N	

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA:

☐ PUMP ☐ AIR LIFT ☐ BAILER ☑ OTHER – SPECIFY: N/A

TOTAL ESTIMATED WELL YIELD (gpm): 0.00

5. TEST; RIG SUPERVISION

WELL TEST — TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

MISCELLANEOUS INFORMATION:

OSE DJT SEP 28 2021 PM2:25

PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:

Jesse Cote

6. SIGNATURE

BY SIGNING BELOW, I CERTIFY THAT TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED WELL. I ALSO CERTIFY THAT THE WELL TAG, IF REQUIRED, HAS BEEN INSTALLED AND THAT THIS WELL RECORD WILL ALSO BE FILED WITH THE PERMIT HOLDER WITHIN 30 DAYS AFTER THE COMPLETION OF WELL DRILLING.

Mark E. Mumby — Digitally signed by Mark Mumby DN: cn=Mark Mumby, o=HRL Comp, ou=Security Division, email=mmumby@hrlcomp.com, c=US Date: 2021.09.23 10:39:25 -06'00'

Mark E. Mumby — SIGNATURE OF DRILLER / PRINT SIGNEE NAME

9/23/2021 — DATE

FOR OSE INTERNAL USE — WR-20 WELL RECORD & LOG (Version 04/30/2019)

FILE NO.	L-15106	POD NO.	3	TRN NO.	688109	
LOCATION	19S.35E.32.212			WELL TAG ID NO.	N/A	PAGE 2 OF 2

Appendix C: Survey Reports

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

11/05/2020

Julie Linn, PG, RG
Project Manager
HRL Compliance Solutions, Inc.
2385 F ½ Road
Grand Junction, CO 81505

RE: West Pearl Queen Injection Site Survey

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the West Pearl Queen Injection Site, 1RP-5090, Lea County, New Mexico. The Site is located approximately at latitude 32.62257 and longitude -103.475628 in Lea County, New Mexico.

The table on the following page summarizes the coordinate and elevation data for the soil borings at ground surface and groundwater wells, top-of-casing (TOC) north side.

Horizontal coordinates are in US Survey Feet NAD 83 (2011) (EPOCH:2010.0000) New Mexico State Plane East Grid Coordinates, scaled to ground with a combined scale factor 1.0001865347887380997.

Orthometric Heights for groundwater sampling wells (GW-Well) established by running a level loop from a newly installed Temporary Benchmark (TBM). Orthometric Heights for soil borings established using RTK GPS observations tied to TBM. TBM is the top of a corner of a 2" pipe fence and now has an established Orthometric Height of 3737.61 feet NAVD88 and was determined using GPS observations tied to NGS Benchmark "R 97" with a published Orthometric Height of 3894.17 feet NAVD88.

Ryan C. Cortez, PS 22761

11/05/2020
Date (Signed)

Description	Northing (USft)	Easting (USft)	Latitude (DD)	Longitude (DD)	Elevation (USft)	Adjacent Ground (USft)
SB-1	591285.82	805407.04	32.62256571	-103.47563073	3727.40	--
SB-2-GW-Well	591323.27	805345.79	32.62267000	-103.47582864	3736.29	3736.49
SB-3	591492.39	805418.13	32.62313320	-103.47558926	3734.79	--
SB-4-GW-Well	591429.62	805424.04	32.62296054	-103.47557173	3734.71	3732.56
SB-5-GW-Well	591477.42	805307.41	32.62309452	-103.47594927	3736.17	3734.91
SB-6	591489.37	805374.81	32.62312587	-103.47573007	3734.55	--
SB-7-GW-Well	591427.37	805371.30	32.62295554	-103.47574308	3732.36	3730.65
SB-8*	591412.08	805394.02	32.62291301	-103.47566968	3731.22	--
SB-9	591385.45	805401.60	32.62283966	-103.47564577	3733.19	--
SB-10*	591377.28	805365.42	32.62281800	-103.47576349	3735.42	--
SB-11	591454.91	805338.88	32.62303196	-103.47584764	3731.07	--
SB-12*	591434.45	805287.26	32.62297686	-103.47601584	3735.68	--
SB-13-GW-Well	591376.97	805327.67	32.62281799	-103.47588611	3737.91	3736.41
SB-14-GW-Well	591472.52	805447.61	32.62307793	-103.47549405	3738.27	3736.74
SB-15*	591389.86	805299.08	32.62285405	-103.47597862	3735.50	--
SB-16*	591429.73	805274.48	32.62296417	-103.47605746	3736.01	--
SB-17	591431.91	805296.78	32.62296966	-103.47598496	3735.48	--
SB-18	591465.97	805269.05	32.62306391	-103.47607414	3735.44	--
TBM	591155.83	805430.29	32.62220792	-103.47555861	3737.61	--
NGS-BM-R97	618385.15	811739.10	32.69690317	-103.45433745	3894.17	--

* Soil Borings did not have a flag remaining in ground and were observed at adjusted coordinates of record.

Atkins ENGINEERING ASSOCIATES INC.
2904 W 2nd St.
Roswell, NM 88201
voice: 575.624.2420
fax: 575.624.2421
www.atkinseng.com

05/06/2022

Ronald D. Hillman
Vice President & General Counsel
Armstrong Energy Corporation
PO Box 1973
Roswell, NM 88202

RE: West Pearl Queen Injection Site Survey

Atkins Engineering Associates, Inc. (AEA) has completed the survey at the West Pearl Queen Injection Site, 1RP-5090, Lea County, New Mexico. The Site is located approximately at latitude 32.62257 and longitude -103.475628 in Lea County, New Mexico.

The following table summarizes the coordinate and elevation data for the new groundwater sampling wells (SB-20, SB-21, SB-22, SB-23), top-of-casing (TOC) north side.

Name	Northing (USft)	Easting (USft)	Latitude (DD)	Longitude (DD)	Elevation TOC (USft)	Adjacent Ground (USft)
SB-20	591726.32	805399.52	32.62377656	-103.47564359	3741.11	3738.23
SB-21	591378.96	805769.41	32.62281365	-103.47445140	3737.92	3736.04
SB-22	591415.04	804954.50	32.62293089	-103.47709705	3740.48	3736.38
SB-23	591082.68	805339.15	32.62200890	-103.47585652	3736.30	3733.87
TBM	591155.83	805430.29	32.62220793	-103.47555861	3737.61	--

Horizontal coordinates are in US Survey Feet NAD 83 (2011) (EPOCH:2010.0000) New Mexico State Plane East Grid Coordinates, scaled to ground with a combined scale factor 1.0001865347887380997.

Elevations (Orthometric Heights) for groundwater sampling wells established using RTK GPS observations tied to TBM. TBM is the top of a corner of a 2" pipe fence that has an established Orthometric Height of 3737.61 feet NAVD88 and was determined using GPS observations tied to NGS Benchmark "R 97" with a published Orthometric Height of 3894.17 feet NAVD88.

Ryan C. Cortez, PS 22761

5/6/2022
Date (Signed)

RYAN C CORTEZ
NEW MEXICO
22761
PROFESSIONAL SURVEYOR

Appendix D: Groundwater Lab Reports

Certificate of Analysis Summary 659152

HRL Compliance Solutions, Artesia, NM

Project Name: West Pearl Queen

Project Id:

Contact: Julie Linn

Project Location:

Date Received in Lab: Thu 04.16.2020 17:45

Report Date: 04.23.2020 10:30

Project Manager: Erica Morales

Analysis Requested		659152-001		659152-002		659152-003		659152-004		659152-005		659152-006	
	Field Id:	SB 14		SB 13		SB 2		SB 17		SB 5		SB 7	
	Depth:												
	Matrix:	GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER	
	Sampled:	04.16.2020 08:40		04.16.2020 13:25		04.16.2020 14:50		04.16.2020 15:10		04.16.2020 16:03		04.16.2020 16:15	
BTEX by EPA 8021B SUB: T104704400-19-19	Extracted:	04.20.2020 16:00		04.20.2020 16:00		04.20.2020 16:00		04.20.2020 16:00		04.20.2020 16:00		04.20.2020 16:00	
	Analyzed:	04.21.2020 05:47		04.21.2020 07:26		04.21.2020 07:46		04.21.2020 08:06		04.21.2020 08:27		04.21.2020 08:47	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Benzene		<0.00200	0.00200	0.0254	0.00200	<0.00200	0.00200	0.00290	0.00200	<0.00200	0.00200	0.0202	0.00200
Toluene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	0.00565	0.00200	<0.00200	0.00200	0.0143	0.00200
m,p-Xylenes		<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400	0.00913	0.00400	<0.00400	0.00400	0.00653	0.00400
o-Xylene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	0.00441	0.00200	<0.00200	0.00200	0.00263	0.00200
Total Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	0.0135	0.00200	<0.00200	0.00200	0.00916	0.00200
Total BTEX		<0.00200	0.00200	0.0254	0.00200	<0.00200	0.00200	0.0221	0.00200	<0.00200	0.00200	0.0437	0.00200
Chloride by EPA 300	Extracted:	04.17.2020 15:38		04.17.2020 15:38		04.17.2020 15:38		04.17.2020 15:38		04.17.2020 15:38		04.17.2020 15:38	
	Analyzed:	04.18.2020 11:23		04.18.2020 11:40		04.18.2020 11:45		04.18.2020 11:51		04.18.2020 11:56		04.18.2020 12:13	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Chloride		6840 X	250	928	10.0	1810	250	17300	250	12000	250	3470	250
Specific Conductance @25C by SM2510B SUB: T104704400-19-19	Extracted:												
	Analyzed:	04.20.2020 11:15		04.20.2020 11:15		04.20.2020 11:15		04.20.2020 11:15		04.20.2020 11:15		04.20.2020 11:15	
	Units/RL:	umhos/cm	RL	umhos/cm	RL	umhos/cm	RL	umhos/cm	RL	umhos/cm	RL	umhos/cm	RL
Conductivity		34200	10.0	4900	10.0	13000	10.0	27300	10.0	32300	10.0	22500	10.0
TPH By SW8015 Mod	Extracted:	04.17.2020 16:30		04.17.2020 16:30		04.17.2020 16:30		04.17.2020 16:30		04.17.2020 16:30		04.17.2020 16:30	
	Analyzed:	04.21.2020 00:21		04.21.2020 00:41		04.21.2020 11:48		04.21.2020 01:21		04.21.2020 01:41		04.21.2020 02:02	
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL
Gasoline Range Hydrocarbons (GRO)		<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50
Diesel Range Organics (DRO)		<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50
Motor Oil Range Hydrocarbons (MRO)		<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50	<2.50	2.50

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Erica Morales
Project Manager

Certificate of Analysis Summary 659152

HRL Compliance Solutions, Artesia, NM

Project Name: West Pearl Queen

Project Id:
Contact: Julie Linn
Project Location:

Date Received in Lab: Thu 04.16.2020 17:45
Report Date: 04.23.2020 10:30
Project Manager: Erica Morales

Analysis Requested													
	Lab Id:	659152-001		659152-002		659152-003		659152-004		659152-005		659152-006	
	Field Id:	SB 14		SB 13		SB 2		SB 17		SB 5		SB 7	
	Depth:												
	Matrix:	GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER		GROUND WATER	
	Sampled:	04.16.2020 08:40		04.16.2020 13:25		04.16.2020 14:50		04.16.2020 15:10		04.16.2020 16:03		04.16.2020 16:15	
pH by SM4500-H SUB: T104704400-19-19	***Extracted:***												
	Analyzed:	04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55	
	Units/RL:	Deg C	RL	Deg C	RL	Deg C	RL	Deg C	RL	Deg C	RL	Deg C	RL
Temperature		22.4 K		22.5 K		22.3 K		22.4 K		22.6 K		22.1 K	
pH by SM4500-H SUB: T104704400-19-19	***Extracted:***												
	Analyzed:	04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55		04.20.2020 11:55	
	Units/RL:	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL	SU	RL
pH		7.13 K		7.84 K		7.10 K		6.94 K		6.91 K		7.29 K	

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Erica Morales
Project Manager

Analytical Report 659152

for

HRL Compliance Solutions

Project Manager: Julie Linn

West Pearl Queen

04.23.2020

Collected By: Client

1089 N Canal Street
Carlsbad, NM 88220

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

04.23.2020

Project Manager: **Julie Linn**
HRL Compliance Solutions
112 6th St.
Artesia, NM 88210

Reference: XENCO Report No(s): **659152**
West Pearl Queen
Project Address:

Julie Linn:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 659152. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 659152 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Erica Morales
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Sample Cross Reference 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB 14	W	04.16.2020 08:40		659152-001
SB 13	W	04.16.2020 13:25		659152-002
SB 2	W	04.16.2020 14:50		659152-003
SB 17	W	04.16.2020 15:10		659152-004
SB 5	W	04.16.2020 16:03		659152-005
SB 7	W	04.16.2020 16:15		659152-006

CASE NARRATIVE

Client Name: HRL Compliance Solutions

Project Name: West Pearl Queen

Project ID:
Work Order Number(s): *659152*

Report Date: *04.23.2020*
Date Received: *04.16.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3123450 Chloride by EPA 300

Lab Sample ID 659152-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Chloride recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 659152-001, -002, -003, -004, -005, -006.

The Laboratory Control Sample for Chloride is within laboratory Control Limits, therefore the data was accepted.

Batch: LBA-3123568 BTEX by EPA 8021B

Benzene Relative Percent Difference (RPD) between matrix spike and duplicate was above quality control limits.

Samples in the analytical batch are: 659152-001, -002, -003, -004, -005, -006

Lab Sample ID 659152-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). Benzene recovered below QC limits in the Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 659152-001, -002, -003, -004, -005, -006.

The Laboratory Control Sample for Benzene is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 14** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-001 Date Collected: 04.16.2020 08:40

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**6840**	250	mg/L	04.18.2020 11:23	X	500

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**7.13**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.4**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**34200**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 14** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-001 Date Collected: 04.16.2020 08:40

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 00:21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 00:21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 00:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	04.21.2020 00:21	
o-Terphenyl	84-15-1	108	%	70-135	04.21.2020 00:21	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	04.21.2020 05:47	UXF	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 05:47	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	04.21.2020 05:47	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	04.21.2020 05:47	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	04.21.2020 05:47	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	04.21.2020 05:47	U	1
Total BTEX		<0.00200	0.00200	mg/L	04.21.2020 05:47	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	99	%	70-130	04.21.2020 05:47	
4-Bromofluorobenzene	460-00-4	113	%	70-130	04.21.2020 05:47	

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 13** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-002 Date Collected: 04.16.2020 13:25

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**928**	10.0	mg/L	04.18.2020 11:40		20

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**7.84**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.5**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**4900**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 13** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-002 Date Collected: 04.16.2020 13:25

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 00:41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 00:41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 00:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	109	%	70-135	04.21.2020 00:41	
o-Terphenyl	84-15-1	118	%	70-135	04.21.2020 00:41	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0254**	0.00200	mg/L	04.21.2020 07:26		1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 07:26	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	04.21.2020 07:26	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	04.21.2020 07:26	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	04.21.2020 07:26	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	04.21.2020 07:26	U	1
Total BTEX		**0.0254**	0.00200	mg/L	04.21.2020 07:26		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	105	%	70-130	04.21.2020 07:26	
4-Bromofluorobenzene	460-00-4	123	%	70-130	04.21.2020 07:26	

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 2** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-003 Date Collected: 04.16.2020 14:50

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**1810**	250	mg/L	04.18.2020 11:45		500

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**7.10**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.3**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**13000**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 2** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-003 Date Collected: 04.16.2020 14:50

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 11:48	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 11:48	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 11:48	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	82	%	70-135	04.21.2020 11:48	
o-Terphenyl	84-15-1	87	%	70-135	04.21.2020 11:48	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	04.21.2020 07:46	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1
Total BTEX		<0.00200	0.00200	mg/L	04.21.2020 07:46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	99	%	70-130	04.21.2020 07:46	
4-Bromofluorobenzene	460-00-4	94	%	70-130	04.21.2020 07:46	

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 17** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-004 Date Collected: 04.16.2020 15:10

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**17300**	250	mg/L	04.18.2020 11:51		500

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**6.94**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.4**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**27300**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 17** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-004 Date Collected: 04.16.2020 15:10

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 01:21	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 01:21	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 01:21	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	97	%	70-135	04.21.2020 01:21	
o-Terphenyl	84-15-1	103	%	70-135	04.21.2020 01:21	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.00290**	0.00200	mg/L	04.21.2020 08:06		1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 08:06	U	1
Ethylbenzene	100-41-4	**0.00565**	0.00200	mg/L	04.21.2020 08:06		1
m,p-Xylenes	179601-23-1	**0.00913**	0.00400	mg/L	04.21.2020 08:06		1
o-Xylene	95-47-6	**0.00441**	0.00200	mg/L	04.21.2020 08:06		1
Total Xylenes	1330-20-7	**0.0135**	0.00200	mg/L	04.21.2020 08:06		1
Total BTEX		**0.0221**	0.00200	mg/L	04.21.2020 08:06		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	04.21.2020 08:06	
4-Bromofluorobenzene	460-00-4	101	%	70-130	04.21.2020 08:06	

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 5** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-005 Date Collected: 04.16.2020 16:03

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**12000**	250	mg/L	04.18.2020 11:56		500

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**6.91**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.6**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**32300**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 5** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-005 Date Collected: 04.16.2020 16:03

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 01:41	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 01:41	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 01:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	90	%	70-135	04.21.2020 01:41	
o-Terphenyl	84-15-1	96	%	70-135	04.21.2020 01:41	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	04.21.2020 08:27	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1
Total BTEX		<0.00200	0.00200	mg/L	04.21.2020 08:27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	04.21.2020 08:27	
4-Bromofluorobenzene	460-00-4	102	%	70-130	04.21.2020 08:27	

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HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 7** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-006 Date Collected: 04.16.2020 16:15

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: MAB % Moisture:

Analyst: MAB Date Prep: 04.17.2020 15:38

Seq Number: 3123450

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**3470**	250	mg/L	04.18.2020 12:13		500

Analytical Method: pH by SM4500-H

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123462 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
pH	12408-02-5	**7.29**		SU	04.20.2020 11:55	K	1
Temperature	TEMP	**22.1**		Deg C	04.20.2020 11:55	K	1

Analytical Method: Specific Conductance @25C by SM2510B

Tech: CHE % Moisture:

Analyst: CHE

Seq Number: 3123463 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Conductivity	COND	**22500**	10.0	umhos/cm	04.20.2020 11:15		1

Certificate of Analytical Results 659152

HRL Compliance Solutions, Artesia, NM

West Pearl Queen

Sample Id: **SB 7** Matrix: Ground Water Date Received:04.16.2020 17:45

Lab Sample Id: 659152-006 Date Collected: 04.16.2020 16:15

Analytical Method: TPH By SW8015 Mod Prep Method: SW8015P

Tech: DTH % Moisture:

Analyst: DTH Date Prep: 04.17.2020 16:30

Seq Number: 3123611

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<2.50	2.50	mg/L	04.21.2020 02:02	U	1
Diesel Range Organics (DRO)	C10C28DRO	<2.50	2.50	mg/L	04.21.2020 02:02	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<2.50	2.50	mg/L	04.21.2020 02:02	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	04.21.2020 02:02	
o-Terphenyl	84-15-1	112	%	70-135	04.21.2020 02:02	

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 04.20.2020 16:00

Seq Number: 3123568 SUB: T104704400-19-19

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	**0.0202**	0.00200	mg/L	04.21.2020 08:47		1
Toluene	108-88-3	<0.00200	0.00200	mg/L	04.21.2020 08:47	U	1
Ethylbenzene	100-41-4	**0.0143**	0.00200	mg/L	04.21.2020 08:47		1
m,p-Xylenes	179601-23-1	**0.00653**	0.00400	mg/L	04.21.2020 08:47		1
o-Xylene	95-47-6	**0.00263**	0.00200	mg/L	04.21.2020 08:47		1
Total Xylenes	1330-20-7	**0.00916**	0.00200	mg/L	04.21.2020 08:47		1
Total BTEX		**0.0437**	0.00200	mg/L	04.21.2020 08:47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	04.21.2020 08:47	
4-Bromofluorobenzene	460-00-4	127	%	70-130	04.21.2020 08:47	

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit. **ND** Not Detected.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

QC Summary 659152

HRL Compliance Solutions

West Pearl Queen

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3123450 Matrix: Water Date Prep: 04.17.2020
MB Sample Id: 7701518-1-BLK LCS Sample Id: 7701518-1-BKS LCSD Sample Id: 7701518-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.500	25.0	26.5	106	26.5	106	90-110	0	20	mg/L	04.18.2020 11:12	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3123450 Matrix: Ground Water Date Prep: 04.17.2020
Parent Sample Id: 659152-001 MS Sample Id: 659152-001 S MSD Sample Id: 659152-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	6840	20.0	5820	0	5640	0	90-110	3	20	mg/L	04.18.2020 11:29	X

Analytical Method: **pH by SM4500-H**
Seq Number: 3123462 Matrix: Ground Water
Parent Sample Id: 659152-001 MD Sample Id: 659152-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
pH	7.13	7.16	0	20	SU	04.20.2020 11:55	
Temperature	22.4	22.4	0	20	Deg C	04.20.2020 11:55	

Analytical Method: **Specific Conductance @25C by SM2510B**
Seq Number: 3123463 Matrix: Water
MB Sample Id: 3123463-1-BLK LCS Sample Id: 3123463-1-BKS LCSD Sample Id: 3123463-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	<10.0	1410	1410	100	1420	101	80-120	1	20	umhos/cm	04.20.2020 11:15	

Analytical Method: **Specific Conductance @25C by SM2510B**
Seq Number: 3123463 Matrix: Ground Water
Parent Sample Id: 659152-001 MD Sample Id: 659152-001 D

Parameter	Parent Result	MD Result	%RPD	RPD Limit	Units	Analysis Date	Flag
Conductivity	34200	34200	0	20	umhos/cm	04.20.2020 11:15	

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 659152

HRL Compliance Solutions

West Pearl Queen

Analytical Method: TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123611 — Matrix: Water — Date Prep: 04.17.2020
MB Sample Id: 7701672-1-BLK — LCS Sample Id: 7701672-1-BKS — LCSD Sample Id: 7701672-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<2.50	100	88.1	88	75.6	76	70-135	15	35	mg/L	04.20.2020 22:19	
Diesel Range Organics (DRO)	<2.50	100	96.8	97	80.6	81	70-135	18	35	mg/L	04.20.2020 22:19	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	73		118		118		70-135	%	04.20.2020 22:19
o-Terphenyl	71		111		101		70-135	%	04.20.2020 22:19

Analytical Method: TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123611 — Matrix: Water — Date Prep: 04.17.2020
MB Sample Id: 7701672-1-BLK

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<2.50	mg/L	04.20.2020 21:59	

Analytical Method: TPH By SW8015 Mod — Prep Method: SW8015P
Seq Number: 3123611 — Matrix: Water — Date Prep: 04.17.2020
Parent Sample Id: 659194-001 — MS Sample Id: 659194-001 S — MSD Sample Id: 659194-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<2.31	92.4	75.8	82	61.2	65	70-135	21	35	mg/L	04.20.2020 23:20	X
Diesel Range Organics (DRO)	<2.31	92.4	78.4	85	61.1	65	70-135	25	35	mg/L	04.20.2020 23:20	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		78		70-135	%	04.20.2020 23:20
o-Terphenyl	99		73		70-135	%	04.20.2020 23:20

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3123568 — Matrix: Water — Date Prep: 04.20.2020
MB Sample Id: 7701649-1-BLK — LCS Sample Id: 7701649-1-BKS — LCSD Sample Id: 7701649-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0822	82	0.0969	97	70-130	16	25	mg/L	04.21.2020 03:28	
Toluene	<0.00200	0.100	0.0836	84	0.0948	95	70-130	13	25	mg/L	04.21.2020 03:28	
Ethylbenzene	<0.00200	0.100	0.0862	86	0.0946	95	70-130	9	25	mg/L	04.21.2020 03:28	
m,p-Xylenes	<0.00400	0.200	0.169	85	0.186	93	70-130	10	25	mg/L	04.21.2020 03:28	
o-Xylene	<0.00200	0.100	0.0911	91	0.0943	94	70-130	3	25	mg/L	04.21.2020 03:28	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	94		101		102		70-130	%	04.21.2020 03:28
4-Bromofluorobenzene	85		106		97		70-130	%	04.21.2020 03:28

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 659152

HRL Compliance Solutions

West Pearl Queen

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3123568 Matrix: Ground Water Date Prep: 04.20.2020

Parent Sample Id: 659152-001 MS Sample Id: 659152-001 S MSD Sample Id: 659152-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0867	87	0.0652	65	70-130	28	25	mg/L	04.21.2020 04:08	XF
Toluene	<0.00200	0.100	0.0855	86	0.0793	79	70-130	8	25	mg/L	04.21.2020 04:08	
Ethylbenzene	<0.00200	0.100	0.0871	87	0.0871	87	70-130	0	25	mg/L	04.21.2020 04:08	
m,p-Xylenes	<0.00400	0.200	0.168	84	0.174	87	70-130	4	25	mg/L	04.21.2020 04:08	
o-Xylene	<0.00200	0.100	0.0881	88	0.0917	92	70-130	4	25	mg/L	04.21.2020 04:08	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		96		70-130	%	04.21.2020 04:08
4-Bromofluorobenzene	96		102		70-130	%	04.21.2020 04:08

MS/MSD Percent Recovery [D] = 100*(C-A) / B

Relative Percent Difference RPD = 200* | (C-E) / (C+E) |

LCS/LCSD Recovery [D] = 100 * (C) / [B]

Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample

A = Parent Result

C = MS/LCS Result

E = MSD/LCSD Result

MS = Matrix Spike

B = Spike Added

D = MSD/LCSD % Rec

XENCO LABORATORIES

Chain of Custody

Work Order No: 659152

Houston,TX (281) 240-4200 Dallas,TX (214) 902-0300 San Antonio,TX (210) 509-3334
Midland,TX (432) 704-5440 EL Paso,TX (915) 585-3443 Lubbock,TX (806) 794-1296 Craslbad, NM (432) 704-5440
Phoenix,AZ (480) 355-0900 Atlanta,GA (770) 449-8800 Tampa,FL (813) 620-2000 West Palm Beach, FL (561) 689-6701

www.xenco.com Page 1 of 1

Project Manager:	Julie Linn	Bill to: (if different)	HRL
Company Name:	HRL Compliance Solutions	Company Name:	
Address:	112 S. 6th St.	Address:	
City, State ZIP:	Artesia, NM	City, State ZIP:	
Phone:	(970) 903-8747	Email:	jlinn@hrlcomp.com

Work Order Comments

Program: UST/PST ☐ PRP ☐ Brownfields ☐ RRC ☐ Superfund ☐

State of Project:

Reporting: Level II ☐ Level III ☐ PST/UST ☐ TRRP ☐ Level IV ☐

Deliverables: EDD ☐ ADaPT ☐ Other:

Project Name:	West Pearl Queen	Turn Around	
Project Number:		Routine	☒
Project Location		Rush:	
Sampler's Name:	J. Linn	Due Date:	
PO #:		Quote #:	

SAMPLE RECEIPT

Temp Blank:	(Yes) No	Wet Ice:	(Yes) No
Temperature (°C):	~~4.1~~ 1.0	Thermometer ID	T-NM-007
Received Intact:	(Yes) No		
Cooler Custody Seals:	Yes (No) N/A	Correction Factor:	-0.2
Sample Custody Seals:	Yes (No) N/A	Total Containers:	42

ANALYSIS REQUEST

Lab ID	Sample Identification	Matrix	Date Sampled	Time Sampled	Depth	Number of Containers	TPH - GRO, DRO, ORO 8015	BTEX	CL	PH	Electrical Conductivity	Sample Comments
	SB14	GW	4-16-20	0840	—	7	X	X	X	X	X	
	SB13	GW	4-16-20	1325	—	7	X	X	X	X	X	
	SB2	GW	4-16-20	1450	—	7	X	X	X	X	X	
	SB17	GW	4-16-20	1510	—	7	X	X	X	X	X	
	SB5	GW	4-16-20	1603	—	7	X	X	X	X	X	
	SB7	GW	4-16-20	1615	—	7	X	X	X	X	X	

Preservative Codes

MeOH: Me
None: NO
HNO3: HN
H2S04: H2
HCL: HL
NaOH: Na
Zn Acetate+ NaOH: Zn

TAT starts the day recevied by the lab, if received by 4:00pm

Total 200.7 / 6010 200.8 / 6020: 8RCRA 13PPM Texas 11 Al Sb As Ba Be B Cd Ca Cr Co Cu Fe Pb Mg Mn Mo Ni K Se Ag SiO2 Na Sr Tl Sn U V Zn

Circle Method(s) and Metal(s) to be analyzed TCLP / SPLP 6010: 8RCRA Sb As Ba Be Cd Cr Co Cu Pb Mn Mo Ni Se Ag Tl U 1631 / 245.1 / 7470 / 7471 : Hg

Relinquished by: (Signature)	Received by: (Signature)	Date/Time	Relinquished by: (Signature)	Received by: (Signature)	Date/Time
Julie L—	[signature]	4/16/20 1745	2		
			4		
			6		

Revised Date 022619 Rev. 2019.1

Inter-Office Shipment

IOS Number **62277**

Date/Time: 04/17/20 11:29
Lab# From: **Carlsbad**
Lab# To: **Midland**

Created by: Elizabeth Mcclellan
Delivery Priority:
Air Bill No.:

Please send report to: Erica Morales
Address: 1089 N Canal Street
E-Mail: erica.morales@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
659152-001	W	SB 14	04/16/20 08:40	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-001	W	SB 14	04/16/20 08:40	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-001	W	SB 14	04/16/20 08:40	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 08:55	EIM		
659152-002	W	SB 13	04/16/20 13:25	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-002	W	SB 13	04/16/20 13:25	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 13:40	EIM		
659152-002	W	SB 13	04/16/20 13:25	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-003	W	SB 2	04/16/20 14:50	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-003	W	SB 2	04/16/20 14:50	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 15:05	EIM		
659152-003	W	SB 2	04/16/20 14:50	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-004	W	SB 17	04/16/20 15:10	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 15:25	EIM		
659152-004	W	SB 17	04/16/20 15:10	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-004	W	SB 17	04/16/20 15:10	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-005	W	SB 5	04/16/20 16:03	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-005	W	SB 5	04/16/20 16:03	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 16:18	EIM		
659152-005	W	SB 5	04/16/20 16:03	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-006	W	SB 7	04/16/20 16:15	SM2510B	Specific Conductance @25C by SM2510	04/22/20	05/14/20	EIM		
659152-006	W	SB 7	04/16/20 16:15	SW8021B	BTEX by EPA 8021B	04/22/20	04/30/20	EIM	BR4FBZ BZ BZME EBZ X	
659152-006	W	SB 7	04/16/20 16:15	SM4500-H	pH by SM4500-H	04/22/20	04/16/20 16:30	EIM		

Inter Office Shipment or Sample Comments:

Relinquished By: Elizabeth McClellan

Date Relinquished: 04/17/2020

Received By: Brianna Teel

Date Received: 04/20/2020 10:20

Cooler Temperature: 0.6

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Midland

IOS #: 62277

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used :

Sent By: Elizabeth McClellan **Date Sent:** 04/17/2020 11:29 AM

Received By: Brianna Teel **Date Received:** 04/20/2020 10:20 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	.6	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 *Custody Seals Signed and dated for Containers/coolers	**Yes**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: Brianna Teel Date: 04/20/2020

Brianna Teel

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: HRL Compliance Solutions

Date/ Time Received: 04.16.2020 05.45.00 PM

Work Order #: 659152

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : T-NM-007

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**Yes**	
#5 Custody Seals intact on sample bottles?	**Yes**	
#6*Custody Seals Signed and dated?	**Yes**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**No**	Samples split in lab for Chloride Method. 4-17-20 EM
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	SM4500H, SM2510 and BTEX subbed to Midland.
#18 Water VOC samples have zero headspace?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#: 10Fox1971

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: HRL Compliance Solutions

Date/ Time Received: 04.16.2020 05.45.00 PM

Work Order #: 659152

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Sample Receipt Checklist

A032690e

Checklist completed by: Elizabeth McClellan Date: 04.17.2020

Checklist reviewed by: Erica Morales Date: 04.17.2020

Report to:

Chris Cortez

5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

Armstrong

Project Name:	West Pearlqueen 10
Work Order:	E205154
Job Number:	20071-0001
Received:	5/27/2022

Revision: 1

Report Reviewed By:

Walter Hinchman
Laboratory Director
6/3/22

Date Reported: 6/3/22

Chris Cortez
2904 W 2nd St.
Roswell, NM 88201

Project Name: West Peariqueen 10
Workorder: E205154
Date Received: 5/27/2022 12:37:00PM

Chris Cortez,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 5/27/2022 12:37:00PM, under the Project Name: West Peariqueen 10.

The analytical test results summarized in this report with the Project Name: West Peariqueen 10 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
Office: 505-632-1881
rainaschwanz@envirotech-inc.com

Alexa Michaels
Sample Custody Officer
Office: 505-632-1881
labadmin@envirotech-inc.com

Field Offices:

Southern New Mexico Area
Lynn Jarboe
Technical Representative/Client Services
Office: 505-421-LABS(5227)
Cell: 505-320-4759
ljarboe@envirotech-inc.com

West Texas Midland/Odessa Area
Rayny Hagan
Technical Representative
Office: 505-421-LABS(5227)

Envirotech Web Address: www.envirotech-inc.com

Table of Contents

Sample Summary

Armstrong	Project Name:	West Pearlqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	06/03/22 16:29

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SB 2	E205154-01A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-01B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-01C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-01D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-01E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-01F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-01G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 4	E205154-02A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-02B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-02C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-02D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-02E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-02F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-02G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 7	E205154-03A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-03B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-03C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-03D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-03E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-03F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-03G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 13	E205154-04A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-04B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-04C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-04D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-04E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-04F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-04G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 14	E205154-05A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-05B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-05C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-05D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-05E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-05F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-05G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 20	E205154-06A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-06B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-06C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-06D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-06E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-06F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-06G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 21	E205154-07A	Aqueous	05/26/22	05/27/22	Poly 125mL

Sample Summary

Armstrong	Project Name:	West Peariqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	06/03/22 16:29

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SB 21	E205154-07B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-07C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-07D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-07E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-07F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-07G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 22	E205154-08A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-08B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-08C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-08D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-08E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-08F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-08G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
SB 23	E205154-09A	Aqueous	05/26/22	05/27/22	Poly 125mL
	E205154-09B	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-09C	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-09D	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-09E	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-09F	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
	E205154-09G	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl
Trip Blank	E205154-10A	Aqueous	05/26/22	05/27/22	VOA Vial, 40mL; HCl

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 2

E205154-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*102 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.3 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/02/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/02/22	
Surrogate: n-Nonane		*91.3 %*	*50-200*	*06/02/22*	*06/02/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**112**	4.00	2	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 4

E205154-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*97.3 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.2 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/02/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/02/22	
Surrogate: n-Nonane		*97.4 %*	*50-200*	*06/02/22*	*06/02/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**28.7**	2.00	1	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 7

E205154-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	**5.09**	1.00	1	06/02/22	06/02/22	
Ethylbenzene	**8.44**	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*103 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	**0.136**	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*92.5 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/02/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/02/22	
Surrogate: n-Nonane		*93.5 %*	*50-200*	*06/02/22*	*06/02/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**30.6**	2.00	1	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 13

E205154-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*104 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*88.9 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/02/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/02/22	
Surrogate: n-Nonane		*96.5 %*	*50-200*	*06/02/22*	*06/02/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**188**	4.00	2	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 14

E205154-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*105 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.5 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/02/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/02/22	
Surrogate: n-Nonane		*97.6 %*	*50-200*	*06/02/22*	*06/02/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**711**	40.0	20	06/02/22	06/03/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 20

E205154-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	**1.56**	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	**13.0**	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*101 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*89.6 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/03/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/03/22	
Surrogate: n-Nonane		*101 %*	*50-200*	*06/02/22*	*06/03/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**185000**	2000	1000	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 21

E205154-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	**5.77**	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*106 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*90.9 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/03/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/03/22	
Surrogate: n-Nonane		*102 %*	*50-200*	*06/02/22*	*06/03/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**96800**	2000	1000	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 22

E205154-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	**17.5**	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*95.9 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*92.2 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/03/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/03/22	
Surrogate: n-Nonane		*101 %*	*50-200*	*06/02/22*	*06/03/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**170000**	2000	1000	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

SB 23

E205154-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	**3.09**	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*101 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - GRO	mg/L	mg/L	Analyst: IY			Batch: 2223037
Gasoline Range Organics (C6-C10)	ND	0.100	1	06/02/22	06/02/22	
Surrogate: 1-Chloro-4-fluorobenzene-FID		*91.7 %*	*70-130*	*06/02/22*	*06/02/22*	
Nonhalogenated Organics by EPA 8015D - DRO/ORO	mg/L	mg/L	Analyst: JL			Batch: 2223017
Diesel Range Organics (C10-C28)	ND	1.00	1	06/02/22	06/03/22	
Oil Range Organics (C28-C36)	ND	2.00	1	06/02/22	06/03/22	
Surrogate: n-Nonane		*99.6 %*	*50-200*	*06/02/22*	*06/03/22*	
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: KL			Batch: 2223038
Chloride	**76100**	2000	1000	06/02/22	06/02/22	

Sample Data

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

Trip Blank

E205154-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organics by EPA 8021B	ug/L	ug/L	Analyst: IY			Batch: 2223037
Benzene	ND	1.00	1	06/02/22	06/02/22	
Ethylbenzene	ND	1.00	1	06/02/22	06/02/22	
Toluene	ND	1.00	1	06/02/22	06/02/22	
o-Xylene	ND	1.00	1	06/02/22	06/02/22	
p,m-Xylene	ND	2.00	1	06/02/22	06/02/22	
Total Xylenes	ND	1.00	1	06/02/22	06/02/22	
Surrogate: 4-Bromochlorobenzene-PID		*88.6 %*	*70-130*	*06/02/22*	*06/02/22*	

QC Summary Data

Armstrong	Project Name:	West Peariqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

Volatile Organics by EPA 8021B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	ug/L	ug/L	ug/L	ug/L	%	%	%	%	
Blank (2223037-BLK1)									Prepared: 06/02/22 Analyzed: 06/02/22
Benzene	ND	1.00							
Ethylbenzene	ND	1.00							
Toluene	ND	1.00							
o-Xylene	ND	1.00							
p,m-Xylene	ND	2.00							
Total Xylenes	ND	1.00							
Surrogate: 4-Bromochlorobenzene-PID	*166*		*160*		*104*	*70-130*			
LCS (2223037-BS1)									Prepared: 06/02/22 Analyzed: 06/02/22
Benzene	94.8	1.00	100		94.8	70-130			
Ethylbenzene	91.0	1.00	100		91.0	70-130			
Toluene	94.4	1.00	100		94.4	70-130			
o-Xylene	95.0	1.00	100		95.0	70-130			
p,m-Xylene	188	2.00	200		94.0	70-130			
Total Xylenes	283	1.00	300		94.3	70-130			
Surrogate: 4-Bromochlorobenzene-PID	*165*		*160*		*103*	*70-130*			
LCS Dup (2223037-BSD1)									Prepared: 06/02/22 Analyzed: 06/02/22
Benzene	102	1.00	100		102	70-130	7.00	20	
Ethylbenzene	97.0	1.00	100		97.0	70-130	6.44	20	
Toluene	101	1.00	100		101	70-130	6.94	20	
o-Xylene	101	1.00	100		101	70-130	5.90	20	
p,m-Xylene	200	2.00	200		100	70-130	6.18	20	
Total Xylenes	301	1.00	300		100	70-130	6.08	20	
Surrogate: 4-Bromochlorobenzene-PID	*163*		*160*		*102*	*70-130*			

QC Summary Data

Armstrong	Project Name:	West Peariqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

Nonhalogenated Organics by EPA 8015D - GRO

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/L	mg/L	mg/L	mg/L	%	%	%	%	
Blank (2223037-BLK1)									Prepared: 06/02/22 Analyzed: 06/02/22
Gasoline Range Organics (C6-C10)	ND	0.100							
Surrogate: 1-Chloro-4-fluorobenzene-FID	*0.145*		*0.160*		*90.3*	*70-130*			
LCS (2223037-BS2)									Prepared: 06/02/22 Analyzed: 06/02/22
Gasoline Range Organics (C6-C10)	0.953	0.100	1.00		95.3	70-130			
Surrogate: 1-Chloro-4-fluorobenzene-FID	*0.147*		*0.160*		*92.0*	*70-130*			
LCS Dup (2223037-BSD2)									Prepared: 06/02/22 Analyzed: 06/02/22
Gasoline Range Organics (C6-C10)	1.02	0.100	1.00		102	70-130	6.78	20	
Surrogate: 1-Chloro-4-fluorobenzene-FID	*0.147*		*0.160*		*91.9*	*70-130*			

QC Summary Data

Armstrong	Project Name:	West Peariqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

Nonhalogenated Organics by EPA 8015D - DRO/ORO

Analyst: JL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/L	mg/L	mg/L	mg/L	%	%	%	%	
Blank (2223017-BLK1)									Prepared: 06/02/22 Analyzed: 06/02/22
Diesel Range Organics (C10-C28)	ND	1.00							
Oil Range Organics (C28-C36)	ND	2.00							
Surrogate: n-Nonane	*2.26*		*2.50*		*90.4*	*50-200*			
LCS (2223017-BS1)									Prepared: 06/02/22 Analyzed: 06/02/22
Diesel Range Organics (C10-C28)	7.87	1.00	12.5		63.0	36-132			
Surrogate: n-Nonane	*2.41*		*2.50*		*96.4*	*50-200*			
LCS Dup (2223017-BSD1)									Prepared: 06/02/22 Analyzed: 06/02/22
Diesel Range Organics (C10-C28)	6.19	1.00	12.5		49.5	36-132	23.9	20	R3
Surrogate: n-Nonane	*2.22*		*2.50*		*88.7*	*50-200*			

QC Summary Data

Armstrong	Project Name:	West Pearlqueen 10	**Reported:**
2904 W 2nd St.	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	6/3/2022 4:29:06PM

Anions by EPA 300.0/9056A

Analyst: KL

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/L	mg/L	mg/L	mg/L	%	%	%	%	
Blank (2223038-BLK1)									Prepared: 06/02/22 Analyzed: 06/02/22
Chloride	ND	2.00							
LCS (2223038-BS1)									Prepared: 06/02/22 Analyzed: 06/02/22
Chloride	25.6	2.00	25.0		102	90-110			
LCS Dup (2223038-BSD1)									Prepared: 06/02/22 Analyzed: 06/02/22
Chloride	26.3	2.00	25.0		105	90-110	2.79	20	

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

Armstrong	Project Name:	West Peariqueen 10	
2904 W 2nd St.	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	06/03/22 16:29

R3	The RPD exceeded the acceptance limit. LCS spike recovery met acceptance criteria.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information | Chain of Custody | Page 1 of 1

Client:	Armstrong
Project:	West Pearl Queen 10
Project Manager:	Chris Carter
Address:	2904 W 2nd St
City, State, Zip	Roswell, NM 88201
Phone:	575 624 2420
Email:	
Report due by:	

Bill To

Attention:	Atkins Engineering
Address:	2904 W 2nd St
City, State, Zip	Roswell NM 88201
Phone:	575 624-2420
Email:	Sampling@AtkinsEng.com

Lab Use Only

Lab WO#	Job Number
E205154	20071-0001

TAT

1D	2D	3D	Standard
			X

EPA Program

CWA	SDWA
	RCRA

State

NM	CO	UT	AZ	TX	
X					

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	BGDOC	Remarks
1525	5/26/22	Ag	1	SB 2	1	X	X	X			X	X	
1500			1	SB 4	2								
			1	SB 5	3								
1444			1	SB 7	4								
1430			1	SB 13	5								
1511			1	SB 14	6								
1409			1	SB 20	7								
1320			1	SB 21	8								
1345			1	SB 22	9								
1345			1	SB 23	10								
			1	Trip Blank									

Additional Instructions: PLEASE RUN BGDOC PACKAGE ON ALL SAMPLES (BTEX, GRO, DRO, ORO, CHLORIDES)

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
	5/26/22	18:15		5/26/22	1815
	5.26.22	1840		5-26-22	18:40
	5-27-22	12:37		5/27/22	12:37

Lab Use Only

Received on ice: (Y) / N

T1 _____ T2 _____ T3 _____

AVG Temp °C 4

Sample Matrix: **S** - Soil, **Sd** - Solid, **Sg** - Sludge, **A** - Aqueous, **O** - Other _____

Container Type: **g** - glass, **p** - poly/plastic, **ag** - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

Envirotech Analytical Laboratory

Printed: 5/27/2022 2:43:25PM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	Armstrong	Date Received:	05/27/22 12:37	Work Order ID:	E205154
Phone:	(575) 624-2420	Date Logged In:	05/27/22 14:33	Logged In By:	Caitlin Christian
Email:		Due Date:	06/03/22 17:00 (4 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Courrier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes

Sample Cooler

7. Was a sample cooler received?	Yes
8. If yes, was cooler received in good condition?	Yes
9. Was the sample(s) received intact, i.e., not broken?	Yes
10. Were custody/security seals present?	No
11. If yes, were custody/security seals intact?	NA
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes
13. If no visible ice, record the temperature. Actual sample temperature: 4°C	

Sample Container

14. Are aqueous VOC samples present?	Yes
15. Are VOC samples collected in VOA Vials?	Yes
16. Is the head space less than 6-8 mm (pea sized or less)?	Yes
17. Was a trip blank (TB) included for VOC analyses?	Yes
18. Are non-VOC samples collected in the correct containers?	Yes
19. Is the appropriate volume/weight or number of sample containers collected?	Yes

Field Label

20. Were field sample labels filled out with the minimum information:	
Sample ID?	Yes
Date/Time Collected?	Yes
Collectors name?	Yes

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	Yes
22. Are sample(s) correctly preserved?	Yes
24. Is lab filteration required and/or requested for dissolved metals?	No

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: na

Client Instruction

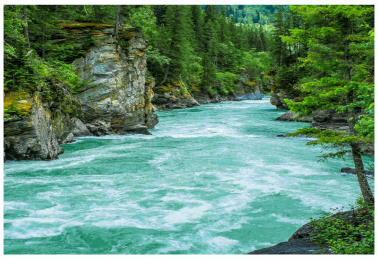
Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

Report to:

Chris Cortez



5796 U.S. Hwy 64
Farmington, NM 87401

Phone: (505) 632-1881
Envirotech-inc.com

envirotech

Practical Solutions for a Better Tomorrow

Analytical Report

West Pearl Queen

Project Name: Aecwpea_SPJ_21

Work Order: E304026

Job Number: 20071-0001

Received: 4/7/2023

Revision: 2

Report Reviewed By:

Walter Hinchman
Laboratory Director
4/14/23

Date Reported: 4/14/23

Chris Cortez
2904 W 2nd St
Roswell, NM 88201

Project Name: Aecwpea_SPJ_21
Workorder: E304026
Date Received: 4/7/2023 8:15:00AM

Chris Cortez,

Thank you for choosing Envirotech, Inc. as your analytical testing laboratory for the sample(s) received on, 4/7/2023 8:15:00AM, under the Project Name: Aecwpea_SPJ_21.

The analytical test results summarized in this report with the Project Name: Aecwpea_SPJ_21 apply to the individual samples collected, identified and submitted bearing the project name on the enclosed chain-of-custody. Subcontracted sample analyses not conducted by Envirotech, Inc., are attached in full as issued by the subcontract laboratory.

Please review the Chain-of-Custody (COC) and Sample Receipt Checklist (SRC) for any issues reguarding sample receipt temperature, containers, preservation etc. To best understand your test results, review the entire report summarizing your sample data and the associated quality control batch data.

All reported data in this analytical report were analyzed according to the referenced method(s) and are in compliance with the latest NELAC/TNI standards, unless otherwise noted. Samples or analytical quality control parameters not meeting specific QC criteria are qualified with a data flag. Data flag definitions are located in the Notes and Definitions section of this analytical report.

If you have any questions concerning this report, please feel free to contact Envirotech, Inc.

Respectfully,

Walter Hinchman
Laboratory Director
Office: 505-632-1881
Cell: 775-287-1762
whinchman@envirotech-inc.com

Raina Schwanz
Laboratory Administrator
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Alexa Michaels
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ljarboe@envirotech-inc.com

West Texas Midland/Odessa Area
Rayny Hagan
Technical Representative
Office: 505-421-LABS(5227)

Envirotech Web Address: www.envirotech-inc.com

Table of Contents

Sample Summary

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	**Reported:**
2904 W 2nd St	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	04/14/23 11:08

Client Sample ID	Lab Sample ID	Matrix	Sampled	Received	Container
SB-2	E304026-01A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-01B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-01C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-01D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-4	E304026-02A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-02B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-02C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-02D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-7	E304026-03A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-03B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-03C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-03D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-13	E304026-04A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-04B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-04C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-04D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-14	E304026-05A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-05B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-05C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-05D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-20	E304026-06A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-06B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-06C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-06D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-21	E304026-07A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-07B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-07C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-07D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-22	E304026-08A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-08B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-08C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-08D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-23	E304026-09A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-09B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-09C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-09D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
SB-5	E304026-10A	Aqueous	04/05/23	04/07/23	Poly 125mL
	E304026-10B	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-10C	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl
	E304026-10D	Aqueous	04/05/23	04/07/23	VOA Vial, 40mL; HCl

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-2

E304026-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1c
Benzene	ND	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	ND	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	ND	2.00	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-2

E304026-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene		*92.7 %*	*70-130*	*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4		*99.3 %*	*70-130*	*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8		*102 %*	*70-130*	*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-2

E304026-01

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**81.3**	40.0	20	04/07/23	04/07/23	
Nitrate-N	ND	5.00	20	04/07/23 08:14	04/07/23 10:57	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-4

E304026-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1b
Benzene	ND	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	ND	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	ND	2.00	1	04/13/23	04/13/23	
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-4

E304026-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene	*92.6 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4	*103 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8	*101 %*	*70-130*		*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-4

E304026-02

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**86.2**	2.00	1	04/07/23	04/07/23	
Nitrate-N	ND	0.250	1	04/07/23 08:14	04/07/23 10:47	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-7

E304026-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1e
Benzene	**9.28**	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	**5.34**	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	**2.26**	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	ND	2.00	1	04/13/23	04/13/23	
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-7

E304026-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene	*95.5 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4	*99.3 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8	*102 %*	*70-130*		*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-7

E304026-03

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**27.0**	4.00	2	04/07/23	04/07/23	
Nitrate-N	ND	0.500	2	04/07/23 08:14	04/07/23 10:18	H2

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-13

E304026-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1d
Benzene	ND	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	ND	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	ND	2.00	1	04/13/23	04/13/23	
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-13

E304026-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene	*93.4 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4	*102 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8	*100 %*	*70-130*		*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-13

E304026-04

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**424**	20.0	10	04/07/23	04/07/23	
Nitrate-N	ND	2.50	10	04/07/23 08:14	04/07/23 11:07	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-14

E304026-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1e
Benzene	ND	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	ND	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	ND	2.00	1	04/13/23	04/13/23	
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-14

E304026-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene	*92.2 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4	*103 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8	*102 %*	*70-130*		*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-14

E304026-05

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**388**	40.0	20	04/07/23	04/07/23	
Nitrate-N	ND	5.00	20	04/07/23 08:14	04/07/23 11:27	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-20

E304026-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	200	5	04/10/23	04/10/23	
Benzene	ND	5.00	5	04/10/23	04/10/23	
Bromobenzene	ND	5.00	5	04/10/23	04/10/23	
Bromochloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromodichloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromoform	ND	5.00	5	04/10/23	04/10/23	
Bromomethane	ND	10.0	5	04/10/23	04/10/23	
n-Butyl Benzene	ND	5.00	5	04/10/23	04/10/23	
sec-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
tert-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
Carbon Tetrachloride	ND	5.00	5	04/10/23	04/10/23	
Chlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Chloroethane	ND	10.0	5	04/10/23	04/10/23	
Chloroform	ND	25.0	5	04/10/23	04/10/23	
Chloromethane	ND	10.0	5	04/10/23	04/10/23	
2-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
4-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
Dibromochloromethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	25.0	5	04/10/23	04/10/23	
1,2-Dibromoethane (EDB)	ND	10.0	5	04/10/23	04/10/23	
Dibromomethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,4-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Dichlorodifluoromethane (Freon-12)	ND	10.0	5	04/10/23	04/10/23	
1,1-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
cis-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
trans-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
2,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
cis-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
trans-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
Diisopropyl Ether (DIPE)	ND	5.00	5	04/10/23	04/10/23	
Ethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Ethyl tert-Butyl Ether (ETBE)	ND	5.00	5	04/10/23	04/10/23	
Hexachlorobutadiene	ND	25.0	5	04/10/23	04/10/23	
2-Hexanone	ND	100	5	04/10/23	04/10/23	
Isopropylbenzene	ND	5.00	5	04/10/23	04/10/23	
4-Isopropyltoluene	ND	5.00	5	04/10/23	04/10/23	
2-Butanone (MEK)	ND	100	5	04/10/23	04/10/23	
Methylene Chloride	**187**	10.0	5	04/10/23	04/10/23	
1-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	
2-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-20

E304026-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	100	5	04/10/23	04/10/23	
Methyl tert-Butyl Ether (MTBE)	ND	5.00	5	04/10/23	04/10/23	
Naphthalene	ND	25.0	5	04/10/23	04/10/23	
n-Propyl Benzene	ND	5.00	5	04/10/23	04/10/23	
Styrene	ND	5.00	5	04/10/23	04/10/23	
tert-Amyl Methyl ether (TAME)	ND	5.00	5	04/10/23	04/10/23	
1,1,1,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
Tetrachloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2,3-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,2,4-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,1,1-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
Trichloroethene	ND	5.00	5	04/10/23	04/10/23	
Trichlorofluoromethane (Freon-11)	ND	10.0	5	04/10/23	04/10/23	
1,2,3-Trichloropropane	ND	10.0	5	04/10/23	04/10/23	
1,2,4-Trimethylbenzene	ND	25.0	5	04/10/23	04/10/23	
1,3,5-Trimethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Toluene	ND	5.00	5	04/10/23	04/10/23	
Vinyl chloride	ND	10.0	5	04/10/23	04/10/23	
o-Xylene	ND	5.00	5	04/10/23	04/10/23	
p,m-Xylene	ND	10.0	5	04/10/23	04/10/23	
Total Xylenes	ND	5.00	5	04/10/23	04/10/23	
Surrogate: Bromofluorobenzene	*91.0 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: 1,2-Dichloroethane-d4	*106 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: Toluene-d8	*100 %*	*70-130*		*04/10/23*	*04/10/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-20

E304026-06

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**61700**	2000	1000	04/07/23	04/07/23	
Nitrate-N	ND	250	1000	04/07/23 08:14	04/07/23 09:59	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-21

E304026-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	200	5	04/10/23	04/10/23	G1a
Benzene	ND	5.00	5	04/10/23	04/10/23	
Bromobenzene	ND	5.00	5	04/10/23	04/10/23	
Bromochloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromodichloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromoform	ND	5.00	5	04/10/23	04/10/23	
Bromomethane	ND	10.0	5	04/10/23	04/10/23	
n-Butyl Benzene	ND	5.00	5	04/10/23	04/10/23	
sec-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
tert-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
Carbon Tetrachloride	ND	5.00	5	04/10/23	04/10/23	
Chlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Chloroethane	ND	10.0	5	04/10/23	04/10/23	
Chloroform	ND	25.0	5	04/10/23	04/10/23	
Chloromethane	ND	10.0	5	04/10/23	04/10/23	
2-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
4-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
Dibromochloromethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	25.0	5	04/10/23	04/10/23	
1,2-Dibromoethane (EDB)	ND	10.0	5	04/10/23	04/10/23	
Dibromomethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,4-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Dichlorodifluoromethane (Freon-12)	ND	10.0	5	04/10/23	04/10/23	
1,1-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
cis-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
trans-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
2,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
cis-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
trans-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
Diisopropyl Ether (DIPE)	ND	5.00	5	04/10/23	04/10/23	
Ethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Ethyl tert-Butyl Ether (ETBE)	ND	5.00	5	04/10/23	04/10/23	
Hexachlorobutadiene	ND	25.0	5	04/10/23	04/10/23	
2-Hexanone	ND	100	5	04/10/23	04/10/23	
Isopropylbenzene	ND	5.00	5	04/10/23	04/10/23	
4-Isopropyltoluene	ND	5.00	5	04/10/23	04/10/23	
2-Butanone (MEK)	ND	100	5	04/10/23	04/10/23	
Methylene Chloride	**56.6**	10.0	5	04/10/23	04/10/23	
1-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	
2-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-21

E304026-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	100	5	04/10/23	04/10/23	
Methyl tert-Butyl Ether (MTBE)	ND	5.00	5	04/10/23	04/10/23	
Naphthalene	ND	25.0	5	04/10/23	04/10/23	
n-Propyl Benzene	ND	5.00	5	04/10/23	04/10/23	
Styrene	ND	5.00	5	04/10/23	04/10/23	
tert-Amyl Methyl ether (TAME)	ND	5.00	5	04/10/23	04/10/23	
1,1,1,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
Tetrachloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2,3-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,2,4-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,1,1-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
Trichloroethene	ND	5.00	5	04/10/23	04/10/23	
Trichlorofluoromethane (Freon-11)	ND	10.0	5	04/10/23	04/10/23	
1,2,3-Trichloropropane	ND	10.0	5	04/10/23	04/10/23	
1,2,4-Trimethylbenzene	ND	25.0	5	04/10/23	04/10/23	
1,3,5-Trimethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Toluene	ND	5.00	5	04/10/23	04/10/23	
Vinyl chloride	ND	10.0	5	04/10/23	04/10/23	
o-Xylene	ND	5.00	5	04/10/23	04/10/23	
p,m-Xylene	ND	10.0	5	04/10/23	04/10/23	
Total Xylenes	ND	5.00	5	04/10/23	04/10/23	
Surrogate: Bromofluorobenzene	*89.7 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: 1,2-Dichloroethane-d4	*103 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: Toluene-d8	*100 %*	*70-130*		*04/10/23*	*04/10/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-21

E304026-07

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**94400**	2000	1000	04/07/23	04/07/23	
Nitrate-N	ND	250	1000	04/07/23 08:14	04/07/23 12:07	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-22

E304026-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	200	5	04/10/23	04/10/23	G1a
Benzene	ND	5.00	5	04/10/23	04/10/23	
Bromobenzene	ND	5.00	5	04/10/23	04/10/23	
Bromochloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromodichloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromoform	ND	5.00	5	04/10/23	04/10/23	
Bromomethane	ND	10.0	5	04/10/23	04/10/23	
n-Butyl Benzene	ND	5.00	5	04/10/23	04/10/23	
sec-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
tert-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
Carbon Tetrachloride	ND	5.00	5	04/10/23	04/10/23	
Chlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Chloroethane	ND	10.0	5	04/10/23	04/10/23	
Chloroform	ND	25.0	5	04/10/23	04/10/23	
Chloromethane	ND	10.0	5	04/10/23	04/10/23	
2-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
4-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
Dibromochloromethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	25.0	5	04/10/23	04/10/23	
1,2-Dibromoethane (EDB)	ND	10.0	5	04/10/23	04/10/23	
Dibromomethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,4-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Dichlorodifluoromethane (Freon-12)	ND	10.0	5	04/10/23	04/10/23	
1,1-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
cis-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
trans-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
2,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
cis-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
trans-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
Diisopropyl Ether (DIPE)	ND	5.00	5	04/10/23	04/10/23	
Ethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Ethyl tert-Butyl Ether (ETBE)	ND	5.00	5	04/10/23	04/10/23	
Hexachlorobutadiene	ND	25.0	5	04/10/23	04/10/23	
2-Hexanone	ND	100	5	04/10/23	04/10/23	
Isopropylbenzene	ND	5.00	5	04/10/23	04/10/23	
4-Isopropyltoluene	ND	5.00	5	04/10/23	04/10/23	
2-Butanone (MEK)	ND	100	5	04/10/23	04/10/23	
Methylene Chloride	**254**	10.0	5	04/10/23	04/10/23	
1-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	
2-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-22

E304026-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	100	5	04/10/23	04/10/23	
Methyl tert-Butyl Ether (MTBE)	ND	5.00	5	04/10/23	04/10/23	
Naphthalene	ND	25.0	5	04/10/23	04/10/23	
n-Propyl Benzene	ND	5.00	5	04/10/23	04/10/23	
Styrene	ND	5.00	5	04/10/23	04/10/23	
tert-Amyl Methyl ether (TAME)	ND	5.00	5	04/10/23	04/10/23	
1,1,1,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
Tetrachloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2,3-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,2,4-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,1,1-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
Trichloroethene	ND	5.00	5	04/10/23	04/10/23	
Trichlorofluoromethane (Freon-11)	ND	10.0	5	04/10/23	04/10/23	
1,2,3-Trichloropropane	ND	10.0	5	04/10/23	04/10/23	
1,2,4-Trimethylbenzene	ND	25.0	5	04/10/23	04/10/23	
1,3,5-Trimethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Toluene	ND	5.00	5	04/10/23	04/10/23	
Vinyl chloride	ND	10.0	5	04/10/23	04/10/23	
o-Xylene	ND	5.00	5	04/10/23	04/10/23	
p,m-Xylene	ND	10.0	5	04/10/23	04/10/23	
Total Xylenes	ND	5.00	5	04/10/23	04/10/23	
Surrogate: Bromofluorobenzene	*91.5 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: 1,2-Dichloroethane-d4	*105 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: Toluene-d8	*101 %*	*70-130*		*04/10/23*	*04/10/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-22

E304026-08

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**124000**	2000	1000	04/07/23	04/07/23	
Nitrate-N	ND	250	1000	04/07/23 08:14	04/07/23 10:37	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-23

E304026-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	200	5	04/10/23	04/10/23	G1e
Benzene	ND	5.00	5	04/10/23	04/10/23	
Bromobenzene	ND	5.00	5	04/10/23	04/10/23	
Bromochloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromodichloromethane	ND	5.00	5	04/10/23	04/10/23	
Bromoform	ND	5.00	5	04/10/23	04/10/23	
Bromomethane	ND	10.0	5	04/10/23	04/10/23	
n-Butyl Benzene	ND	5.00	5	04/10/23	04/10/23	
sec-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
tert-Butylbenzene	ND	5.00	5	04/10/23	04/10/23	
Carbon Tetrachloride	ND	5.00	5	04/10/23	04/10/23	
Chlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Chloroethane	ND	10.0	5	04/10/23	04/10/23	
Chloroform	ND	25.0	5	04/10/23	04/10/23	
Chloromethane	ND	10.0	5	04/10/23	04/10/23	
2-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
4-Chlorotoluene	ND	5.00	5	04/10/23	04/10/23	
Dibromochloromethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	25.0	5	04/10/23	04/10/23	
1,2-Dibromoethane (EDB)	ND	10.0	5	04/10/23	04/10/23	
Dibromomethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
1,4-Dichlorobenzene	ND	5.00	5	04/10/23	04/10/23	
Dichlorodifluoromethane (Freon-12)	ND	10.0	5	04/10/23	04/10/23	
1,1-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
cis-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
trans-1,2-Dichloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,3-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
2,2-Dichloropropane	ND	5.00	5	04/10/23	04/10/23	
1,1-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
cis-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
trans-1,3-Dichloropropene	ND	5.00	5	04/10/23	04/10/23	
Diisopropyl Ether (DIPE)	ND	5.00	5	04/10/23	04/10/23	
Ethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Ethyl tert-Butyl Ether (ETBE)	ND	5.00	5	04/10/23	04/10/23	
Hexachlorobutadiene	ND	25.0	5	04/10/23	04/10/23	
2-Hexanone	ND	100	5	04/10/23	04/10/23	
Isopropylbenzene	ND	5.00	5	04/10/23	04/10/23	
4-Isopropyltoluene	ND	5.00	5	04/10/23	04/10/23	
2-Butanone (MEK)	ND	100	5	04/10/23	04/10/23	
Methylene Chloride	**54.0**	10.0	5	04/10/23	04/10/23	
1-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	
2-Methylnaphthalene	ND	50.0	5	04/10/23	04/10/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-23

E304026-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	100	5	04/10/23	04/10/23	
Methyl tert-Butyl Ether (MTBE)	ND	5.00	5	04/10/23	04/10/23	
Naphthalene	ND	25.0	5	04/10/23	04/10/23	
n-Propyl Benzene	ND	5.00	5	04/10/23	04/10/23	
Styrene	ND	5.00	5	04/10/23	04/10/23	
tert-Amyl Methyl ether (TAME)	ND	5.00	5	04/10/23	04/10/23	
1,1,1,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2,2-Tetrachloroethane	ND	5.00	5	04/10/23	04/10/23	
Tetrachloroethene	ND	5.00	5	04/10/23	04/10/23	
1,2,3-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,2,4-Trichlorobenzene	ND	25.0	5	04/10/23	04/10/23	
1,1,1-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
1,1,2-Trichloroethane	ND	5.00	5	04/10/23	04/10/23	
Trichloroethene	ND	5.00	5	04/10/23	04/10/23	
Trichlorofluoromethane (Freon-11)	ND	10.0	5	04/10/23	04/10/23	
1,2,3-Trichloropropane	ND	10.0	5	04/10/23	04/10/23	
1,2,4-Trimethylbenzene	ND	25.0	5	04/10/23	04/10/23	
1,3,5-Trimethylbenzene	ND	5.00	5	04/10/23	04/10/23	
Toluene	ND	5.00	5	04/10/23	04/10/23	
Vinyl chloride	ND	10.0	5	04/10/23	04/10/23	
o-Xylene	ND	5.00	5	04/10/23	04/10/23	
p,m-Xylene	ND	10.0	5	04/10/23	04/10/23	
Total Xylenes	ND	5.00	5	04/10/23	04/10/23	
Surrogate: Bromofluorobenzene	*90.7 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: 1,2-Dichloroethane-d4	*103 %*	*70-130*		*04/10/23*	*04/10/23*	
Surrogate: Toluene-d8	*102 %*	*70-130*		*04/10/23*	*04/10/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-23

E304026-09

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**25700**	2000	1000	04/07/23	04/07/23	
Nitrate-N	ND	250	1000	04/07/23 08:14	04/07/23 11:47	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-5

E304026-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
Acetone	ND	40.0	1	04/13/23	04/13/23	G1
Benzene	**2.61**	1.00	1	04/13/23	04/13/23	
Bromobenzene	ND	1.00	1	04/13/23	04/13/23	
Bromochloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromodichloromethane	ND	1.00	1	04/13/23	04/13/23	
Bromoform	ND	1.00	1	04/13/23	04/13/23	
Bromomethane	ND	2.00	1	04/13/23	04/13/23	
n-Butyl Benzene	ND	1.00	1	04/13/23	04/13/23	
sec-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
tert-Butylbenzene	ND	1.00	1	04/13/23	04/13/23	
Carbon Tetrachloride	ND	1.00	1	04/13/23	04/13/23	
Chlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Chloroethane	ND	2.00	1	04/13/23	04/13/23	
Chloroform	ND	5.00	1	04/13/23	04/13/23	
Chloromethane	ND	2.00	1	04/13/23	04/13/23	
2-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
4-Chlorotoluene	ND	1.00	1	04/13/23	04/13/23	
Dibromochloromethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00	1	04/13/23	04/13/23	
1,2-Dibromoethane (EDB)	ND	2.00	1	04/13/23	04/13/23	
Dibromomethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
1,4-Dichlorobenzene	ND	1.00	1	04/13/23	04/13/23	
Dichlorodifluoromethane (Freon-12)	ND	2.00	1	04/13/23	04/13/23	
1,1-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
cis-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
trans-1,2-Dichloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,3-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
2,2-Dichloropropane	ND	1.00	1	04/13/23	04/13/23	
1,1-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
cis-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
trans-1,3-Dichloropropene	ND	1.00	1	04/13/23	04/13/23	
Diisopropyl Ether (DIPE)	ND	1.00	1	04/13/23	04/13/23	
Ethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Ethyl tert-Butyl Ether (ETBE)	ND	1.00	1	04/13/23	04/13/23	
Hexachlorobutadiene	ND	5.00	1	04/13/23	04/13/23	
2-Hexanone	ND	20.0	1	04/13/23	04/13/23	
Isopropylbenzene	ND	1.00	1	04/13/23	04/13/23	
4-Isopropyltoluene	ND	1.00	1	04/13/23	04/13/23	
2-Butanone (MEK)	ND	20.0	1	04/13/23	04/13/23	
Methylene Chloride	**3.21**	2.00	1	04/13/23	04/13/23	
1-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	
2-Methylnaphthalene	ND	10.0	1	04/13/23	04/13/23	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-5

E304026-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Volatile Organic Compounds by EPA 8260B	ug/L	ug/L	Analyst: IY			Batch: 2315002
4-Methyl-2-pentanone (MIBK)	ND	20.0	1	04/13/23	04/13/23	
Methyl tert-Butyl Ether (MTBE)	ND	1.00	1	04/13/23	04/13/23	
Naphthalene	ND	5.00	1	04/13/23	04/13/23	
n-Propyl Benzene	ND	1.00	1	04/13/23	04/13/23	
Styrene	ND	1.00	1	04/13/23	04/13/23	
tert-Amyl Methyl ether (TAME)	ND	1.00	1	04/13/23	04/13/23	
1,1,1,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2,2-Tetrachloroethane	ND	1.00	1	04/13/23	04/13/23	
Tetrachloroethene	ND	1.00	1	04/13/23	04/13/23	
1,2,3-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,2,4-Trichlorobenzene	ND	5.00	1	04/13/23	04/13/23	
1,1,1-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
1,1,2-Trichloroethane	ND	1.00	1	04/13/23	04/13/23	
Trichloroethene	ND	1.00	1	04/13/23	04/13/23	
Trichlorofluoromethane (Freon-11)	ND	2.00	1	04/13/23	04/13/23	
1,2,3-Trichloropropane	ND	2.00	1	04/13/23	04/13/23	
1,2,4-Trimethylbenzene	ND	5.00	1	04/13/23	04/13/23	
1,3,5-Trimethylbenzene	ND	1.00	1	04/13/23	04/13/23	
Toluene	ND	1.00	1	04/13/23	04/13/23	
Vinyl chloride	ND	2.00	1	04/13/23	04/13/23	
o-Xylene	ND	1.00	1	04/13/23	04/13/23	
p,m-Xylene	ND	2.00	1	04/13/23	04/13/23	
Total Xylenes	ND	1.00	1	04/13/23	04/13/23	
Surrogate: Bromofluorobenzene	*92.9 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: 1,2-Dichloroethane-d4	*103 %*	*70-130*		*04/13/23*	*04/13/23*	
Surrogate: Toluene-d8	*102 %*	*70-130*		*04/13/23*	*04/13/23*	

Sample Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

SB-5

E304026-10

Analyte	Result	Reporting Limit	Dilution	Prepared	Analyzed	Notes
Anions by EPA 300.0/9056A	mg/L	mg/L	Analyst: BA			Batch: 2314052
Chloride	**11300**	200	100	04/07/23	04/07/23	
Nitrate-N	**6.44**	5.00	20	04/07/23 08:14	04/07/23 09:51	H2

QC Summary Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	**Reported:**
2904 W 2nd St	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

Volatile Organic Compounds by EPA 8260B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	ug/L	ug/L	ug/L	ug/L	%	%	%	%	
Blank (2315002-BLK1)									Prepared: 04/10/23 Analyzed: 04/10/23
Acetone	ND	40.0							
Benzene	ND	1.00							
Bromobenzene	ND	1.00							
Bromochloromethane	ND	1.00							
Bromodichloromethane	ND	1.00							
Bromoform	ND	1.00							
Bromomethane	ND	2.00							
n-Butyl Benzene	ND	1.00							
sec-Butylbenzene	ND	1.00							
tert-Butylbenzene	ND	1.00							
Carbon Tetrachloride	ND	1.00							
Chlorobenzene	ND	1.00							
Chloroethane	ND	2.00							
Chloroform	ND	5.00							
Chloromethane	ND	2.00							
2-Chlorotoluene	ND	1.00							
4-Chlorotoluene	ND	1.00							
Dibromochloromethane	ND	1.00							
1,2-Dibromo-3-chloropropane (DBCP)	ND	5.00							
1,2-Dibromoethane (EDB)	ND	2.00							
Dibromomethane	ND	1.00							
1,2-Dichlorobenzene	ND	1.00							
1,3-Dichlorobenzene	ND	1.00							
1,4-Dichlorobenzene	ND	1.00							
Dichlorodifluoromethane (Freon-12)	ND	2.00							
1,1-Dichloroethane	ND	1.00							
1,2-Dichloroethane	ND	1.00							
1,1-Dichloroethene	ND	1.00							
cis-1,2-Dichloroethene	ND	1.00							
trans-1,2-Dichloroethene	ND	1.00							
1,2-Dichloropropane	ND	1.00							
1,3-Dichloropropane	ND	1.00							
2,2-Dichloropropane	ND	1.00							
1,1-Dichloropropene	ND	1.00							
cis-1,3-Dichloropropene	ND	1.00							
trans-1,3-Dichloropropene	ND	1.00							
Diisopropyl Ether (DIPE)	ND	1.00							
Ethylbenzene	ND	1.00							
Ethyl tert-Butyl Ether (ETBE)	ND	1.00							
Hexachlorobutadiene	ND	5.00							
2-Hexanone	ND	20.0							
Isopropylbenzene	ND	1.00							
4-Isopropyltoluene	ND	1.00							
2-Butanone (MEK)	ND	20.0							
Methylene Chloride	ND	2.00							
1-Methylnaphthalene	ND	10.0							
2-Methylnaphthalene	ND	10.0							
4-Methyl-2-pentanone (MIBK)	ND	20.0							
Methyl tert-Butyl Ether (MTBE)	ND	1.00							
Naphthalene	ND	5.00							
n-Propyl Benzene	ND	1.00							
Styrene	ND	1.00							
tert-Amyl Methyl ether (TAME)	ND	1.00							
1,1,1,2-Tetrachloroethane	ND	1.00							
1,1,2,2-Tetrachloroethane	ND	1.00							
Tetrachloroethene	ND	1.00							
1,2,3-Trichlorobenzene	ND	5.00							
1,2,4-Trichlorobenzene	ND	5.00							
1,1,1-Trichloroethane	ND	1.00							
1,1,2-Trichloroethane	ND	1.00							
Trichloroethene	ND	1.00							
Trichlorofluoromethane (Freon-11)	ND	2.00							
1,2,3-Trichloropropane	ND	2.00							
1,2,4-Trimethylbenzene	ND	5.00							

QC Summary Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	**Reported:**
2904 W 2nd St	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

Volatile Organic Compounds by EPA 8260B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	ug/L	ug/L	ug/L	ug/L	%	%	%	%	
Blank (2315002-BLK1)									Prepared: 04/10/23 Analyzed: 04/10/23
1,3,5-Trimethylbenzene	ND	1.00							
Toluene	ND	1.00							
Vinyl chloride	ND	2.00							
o-Xylene	ND	1.00							
p,m-Xylene	ND	2.00							
Total Xylenes	ND	1.00							
Surrogate: Bromofluorobenzene	*9.21*		*10.0*		*92.1*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*9.89*		*10.0*		*98.9*	*70-130*			
Surrogate: Toluene-d8	*10.3*		*10.0*		*103*	*70-130*			
LCS (2315002-BS1)									Prepared: 04/10/23 Analyzed: 04/10/23
Acetone	55.8	40.0	100		55.8	20-185			
Benzene	45.0	1.00	50.0		90.0	70-130			
Bromoform	38.5	1.00	50.0		77.1	70-131			
Bromomethane	50.0	2.00	50.0		99.9	22-187			
sec-Butylbenzene	45.5	1.00	50.0		91.0	70-130			
Carbon Tetrachloride	45.3	1.00	50.0		90.5	70-130			
Chlorobenzene	49.4	1.00	50.0		98.8	70-130			
2-Chlorotoluene	47.1	1.00	50.0		94.2	70-130			
Dibromochloromethane	41.8	1.00	50.0		83.6	70-130			
1,2-Dichlorobenzene	45.4	1.00	50.0		90.8	70-130			
Dichlorodifluoromethane (Freon-12)	67.2	2.00	50.0		134	50-180			
1,1-Dichloroethane	45.2	1.00	50.0		90.5	70-130			
1,1-Dichloroethene	44.5	1.00	50.0		89.0	80-120			
2,2-Dichloropropane	53.4	1.00	50.0		107	50-160			
cis-1,3-Dichloropropene	46.3	1.00	50.0		92.5	70-130			
Ethylbenzene	46.2	1.00	50.0		92.4	80-120			
Isopropylbenzene	42.5	1.00	50.0		84.9	70-130			
Methyl tert-Butyl Ether (MTBE)	78.9	1.00	100		78.9	70-130			
Naphthalene	37.9	5.00	50.0		75.8	70-140			
tert-Amyl Methyl ether (TAME)	37.6	1.00	50.0		75.3	70-130			
Trichloroethene	46.6	1.00	50.0		93.2	70-130			
Toluene	45.7	1.00	50.0		91.4	80-120			
o-Xylene	46.1	1.00	50.0		92.2	70-130			
p,m-Xylene	92.7	2.00	100		92.7	70-130			
Total Xylenes	139	1.00	150		92.5	70-130			
Surrogate: Bromofluorobenzene	*10.1*		*10.0*		*101*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*9.69*		*10.0*		*96.9*	*70-130*			
Surrogate: Toluene-d8	*10.3*		*10.0*		*103*	*70-130*			
Matrix Spike (2315002-MS1)				**Source: E304002-01**					Prepared: 04/10/23 Analyzed: 04/10/23
Acetone	3330	2000	5000	ND	66.6	10-190			
Benzene	2310	50.0	2500	ND	92.3	59-133			
Bromoform	2140	50.0	2500	ND	85.5	66-140			
Bromomethane	2680	100	2500	ND	107	17-190			
sec-Butylbenzene	2260	50.0	2500	ND	90.4	66-139			
Carbon Tetrachloride	2280	50.0	2500	ND	91.4	61-139			
Chlorobenzene	2520	50.0	2500	ND	101	70-130			
2-Chlorotoluene	2400	50.0	2500	ND	96.0	67-134			
Dibromochloromethane	2230	50.0	2500	ND	89.4	70-132			
1,2-Dichlorobenzene	2340	50.0	2500	ND	93.4	70-130			
Dichlorodifluoromethane (Freon-12)	2870	100	2500	ND	115	50-180			
1,1-Dichloroethane	2310	50.0	2500	ND	92.2	64-134			
1,1-Dichloroethene	2240	50.0	2500	ND	89.4	49-144			
2,2-Dichloropropane	2560	50.0	2500	ND	102	45-165			
cis-1,3-Dichloropropene	2380	50.0	2500	ND	95.1	70-130			
Ethylbenzene	2350	50.0	2500	ND	94.2	62-136			
Isopropylbenzene	2160	50.0	2500	ND	86.4	67-136			
Methyl tert-Butyl Ether (MTBE)	4420	50.0	5000	ND	88.5	61-136			
Naphthalene	2180	250	2500	ND	87.0	60-160			
tert-Amyl Methyl ether (TAME)	2070	50.0	2500	ND	82.9	65-135			

QC Summary Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	**Reported:**
2904 W 2nd St	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

Volatile Organic Compounds by EPA 8260B

Analyst: IY

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	ug/L	ug/L	ug/L	ug/L	%	%	%	%	
Matrix Spike (2315002-MS1)				**Source: E304002-01**			Prepared: 04/10/23	Analyzed: 04/10/23	
Trichloroethene	2330	50.0	2500	ND	93.2	49-148			
Toluene	2370	50.0	2500	ND	94.9	67-130			
o-Xylene	2380	50.0	2500	ND	95.0	70-130			
p,m-Xylene	4740	100	5000	ND	94.8	65-135			
Total Xylenes	7110	50.0	7500	ND	94.9	65-135			
Surrogate: Bromofluorobenzene	*498*		*500*		*99.6*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*487*		*500*		*97.3*	*70-130*			
Surrogate: Toluene-d8	*510*		*500*		*102*	*70-130*			
Matrix Spike Dup (2315002-MSD1)				**Source: E304002-01**			Prepared: 04/10/23	Analyzed: 04/10/23	
Acetone	3390	2000	5000	ND	67.8	10-190	1.79	30	
Benzene	2280	50.0	2500	ND	91.3	59-133	1.09	20	
Bromoform	2130	50.0	2500	ND	85.3	66-140	0.234	20	
Bromomethane	2560	100	2500	ND	102	17-190	4.68	20	
sec-Butylbenzene	2240	50.0	2500	ND	89.6	66-139	0.934	20	
Carbon Tetrachloride	2320	50.0	2500	ND	92.6	61-139	1.33	20	
Chlorobenzene	2480	50.0	2500	ND	99.3	70-130	1.44	20	
2-Chlorotoluene	2360	50.0	2500	ND	94.4	67-134	1.64	20	
Dibromochloromethane	2240	50.0	2500	ND	89.4	70-132	0.0224	20	
1,2-Dichlorobenzene	2350	50.0	2500	ND	94.1	70-130	0.746	20	
Dichlorodifluoromethane (Freon-12)	2760	100	2500	ND	111	50-180	3.69	20	
1,1-Dichloroethane	2290	50.0	2500	ND	91.8	64-134	0.522	20	
1,1-Dichloroethene	2240	50.0	2500	ND	89.7	49-144	0.290	20	
2,2-Dichloropropane	2530	50.0	2500	ND	101	45-165	1.08	20	
cis-1,3-Dichloropropene	2360	50.0	2500	ND	94.4	70-130	0.781	20	
Ethylbenzene	2310	50.0	2500	ND	92.3	62-136	1.99	20	
Isopropylbenzene	2110	50.0	2500	ND	84.5	67-136	2.20	20	
Methyl tert-Butyl Ether (MTBE)	4460	50.0	5000	ND	89.2	61-136	0.878	20	
Naphthalene	2230	250	2500	ND	89.0	60-160	2.25	20	
tert-Amyl Methyl ether (TAME)	2100	50.0	2500	ND	83.9	65-135	1.17	20	
Trichloroethene	2300	50.0	2500	ND	91.9	49-148	1.38	20	
Toluene	2290	50.0	2500	ND	91.6	67-130	3.62	20	
o-Xylene	2320	50.0	2500	ND	92.7	70-130	2.49	20	
p,m-Xylene	4600	100	5000	ND	92.1	65-135	2.88	20	
Total Xylenes	6920	50.0	7500	ND	92.3	65-135	2.75	20	
Surrogate: Bromofluorobenzene	*495*		*500*		*98.9*	*70-130*			
Surrogate: 1,2-Dichloroethane-d4	*494*		*500*		*98.7*	*70-130*			
Surrogate: Toluene-d8	*506*		*500*		*101*	*70-130*			

QC Summary Data

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	**Reported:**
2904 W 2nd St	Project Number:	20071-0001	
Roswell NM, 88201	Project Manager:	Chris Cortez	4/14/2023 11:08:40AM

Anions by EPA 300.0/9056A

Analyst: BA

Analyte	Result	Reporting Limit	Spike Level	Source Result	Rec	Rec Limits	RPD	RPD Limit	Notes
	mg/L	mg/L	mg/L	mg/L	%	%	%	%	
Blank (2314052-BLK1)									Prepared: 04/07/23 Analyzed: 04/07/23
Chloride	ND	2.00							
Nitrate-N	ND	0.250							
LCS (2314052-BS1)									Prepared: 04/07/23 Analyzed: 04/07/23
Chloride	25.3	2.00	25.0		101	90-110			
Nitrate-N	2.62	0.250	2.50		105	90-110			
Matrix Spike (2314052-MS1)				**Source: E304026-02**					Prepared: 04/07/23 Analyzed: 04/07/23
Chloride	112	2.00	25.0	86.2	103	80-120			
Nitrate-N	3.45	0.250	2.50	ND	138	80-120			M2
Matrix Spike Dup (2314052-MSD1)				**Source: E304026-02**					Prepared: 04/07/23 Analyzed: 04/07/23
Chloride	111	2.00	25.0	86.2	101	80-120	0.277	20	
Nitrate-N	3.41	0.250	2.50	ND	137	80-120	1.04	20	M2

QC Summary Report Comment:
Calculations are based off of the raw (non-rounded) data. However, for reporting purposes all QC data is rounded to three significant figures. Therefore, hand calculated values may differ slightly.

Definitions and Notes

West Pearl Queen	Project Name:	Aecwpea_SPJ_21	
2904 W 2nd St	Project Number:	20071-0001	**Reported:**
Roswell NM, 88201	Project Manager:	Chris Cortez	04/14/23 11:08

G1	pH > 2. Sample had a pH of 5.5.
G1a	pH >2. Sample had a pH of 3.0.
G1b	pH >2. Sample had a pH of 4.5.
G1c	pH >2. Sample had a pH of 5.0.
G1d	pH >2. Sample had a pH of 5.5
G1e	pH >2. Sample had a pH of 5.5.
H2	Sample was received with an insufficient amount of time to prepare and analyze the sample within the method prescribed holding time. The analysis was performed as quickly as possible per client request.
M2	Matrix spike recovery was outside quality control limits. The associated LCS spike recovery was acceptable.
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
RPD	Relative Percent Difference
DNI	Did Not Ignite

Note (1): Methods marked with ** are non-accredited methods.

Note (2): Soil data is reported on an "as received" weight basis, unless reported otherwise.

Project Information

Chain of Custody

Client: West Pearl Queen	Bill To
Project: AecwPea_SPJ_21	Attention: Atkinsengineering ~~Chris Cortez~~
Project Manager: Chris Cortez	Address: 2904 W 2nd St
Address: 7904 W 2nd St	City, State, Zip Roswell, NM 88201
City, State, Zip Roswell, NM 88201	Phone: (575) ~~420~~ 624-2428
Phone: (575) 624-2420	Email: Kariza@atkinseng.com
Email:	
Report due by:	

Lab Use Only		TAT				EPA Program	
Lab WO#	Job Number	1D	2D	3D	Standard	CWA	SDWA
E304026	20071-0001				X		
							RCRA

State: NM, CO, UT, AZ, TX

Time Sampled	Date Sampled	Matrix	No. of Containers	Sample ID	Lab Number	DRO/ORO by 8015	GRO/DRO by 8015	BTEX by 8021	VOC by 8260	Metals 6010	Chloride 300.0	Nitrates					Remarks
1250	4/5/23	Aq	4	SB-2	1				X		X	X					
1048	|	|	|	SB-4	2				|		|	|					
1012	|	|	|	SB-7	3				|		|	|					
1133	|	|	|	SB-13	4				|		|	|					
1233	|	|	|	SB-14	5				|		|	|					
1005	|	|	|	SB-20	6				|		|	|					
1340	|	|	|	SB-21	7				|		|	|					
1058	|	|	|	SB-22	8				|		|	|					
1248	|	|	|	SB-23	9				|		|	|					
928	|	|	|	SB-5	10				|		|	|					

Additional Instructions:

I, (field sampler), attest to the validity and authenticity of this sample. I am aware that tampering with or intentionally mislabelling the sample location, date or time of collection is considered fraud and may be grounds for legal action. Sampled by:

Samples requiring thermal preservation must be received on ice the day they are sampled or received packed in ice at an avg temp above 0 but less than 6 °C on subsequent days.

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[signature]	4/6/23	1600	[signature]	4·6·23	1600
[signature]	4·6·23	1700	[signature]	4-6-23	1745
[signature]	4-6-23	2330	Caitlin Christ [signature]	4/7/23	8:15

Lab Use Only

Received on ice: (Y) / N

T1 ______ T2 ______ T3 ______

AVG Temp °C 4

Sample Matrix: S - Soil, Sd - Solid, Sg - Sludge, A - Aqueous, O - Other ________

Container Type: g - glass, p - poly/plastic, ag - amber glass, v - VOA

Note: Samples are discarded 30 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at the client expense. The report for the analysis of the above samples is applicable only to those samples received by the laboratory with this COC. The liability of the laboratory is limited to the amount paid for on the report.

envirotech

Envirotech Analytical Laboratory

Printed: 4/7/2023 9:34:08AM

Sample Receipt Checklist (SRC)

Instructions: Please take note of any NO checkmarks.
If we receive no response concerning these items within 24 hours of the date of this notice, all the samples will be analyzed as requested.

Client:	West Pearl Queen	Date Received:	04/07/23 08:15	Work Order ID:	E304026
Phone:	(575) 624-2420	Date Logged In:	04/06/23 16:19	Logged In By:	Caitlin Christian
Email:		Due Date:	04/13/23 17:00 (4 day TAT)		

Chain of Custody (COC)

1. Does the sample ID match the COC?	Yes	
2. Does the number of samples per sampling site location match the COC	Yes	
3. Were samples dropped off by client or carrier?	Yes	Carrier: Courier
4. Was the COC complete, i.e., signatures, dates/times, requested analyses?	Yes	
5. Were all samples received within holding time? Note: Analysis, such as pH which should be conducted in the field, i.e, 15 minute hold time, are not included in this disucssion.	Yes	

Comments/Resolution

Sample Turn Around Time (TAT)

6. Did the COC indicate standard TAT, or Expedited TAT?	Yes

Sample Cooler

7. Was a sample cooler received?	Yes
8. If yes, was cooler received in good condition?	Yes
9. Was the sample(s) received intact, i.e., not broken?	Yes
10. Were custody/security seals present?	No
11. If yes, were custody/security seals intact?	NA
12. Was the sample received on ice? If yes, the recorded temp is 4°C, i.e., 6°±2°C Note: Thermal preservation is not required, if samples are received w/i 15 minutes of sampling	Yes
13. If no visible ice, record the temperature. Actual sample temperature: 4°C	

Sample Container

14. Are aqueous VOC samples present?	Yes
15. Are VOC samples collected in VOA Vials?	Yes
16. Is the head space less than 6-8 mm (pea sized or less)?	Yes
17. Was a trip blank (TB) included for VOC analyses?	No
18. Are non-VOC samples collected in the correct containers?	Yes
19. Is the appropriate volume/weight or number of sample containers collected?	Yes

Field Label

20. Were field sample labels filled out with the minimum information:	
Sample ID?	Yes
Date/Time Collected?	Yes
Collectors name?	No

Sample Preservation

21. Does the COC or field labels indicate the samples were preserved?	Yes
22. Are sample(s) correctly preserved?	Yes
24. Is lab filteration required and/or requested for dissolved metals?	No

Multiphase Sample Matrix

26. Does the sample have more than one phase, i.e., multiphase?	No
27. If yes, does the COC specify which phase(s) is to be analyzed?	NA

Subcontract Laboratory

28. Are samples required to get sent to a subcontract laboratory?	No	
29. Was a subcontract laboratory specified by the client and if so who?	NA	Subcontract Lab: na

Client Instruction

Signature of client authorizing changes to the COC or sample disposition.

Date

envirotech Inc.

FE-1 State of New Mexico
State Engineer

WELL SCHEDULE

Source of data: Obser ☒ Owner ☐ Other _____

Date 3/8 1961 Record by Lobley - Pulley

LOCATION: County Lea Map 108.3.0 108.3.3

OWNER Mrs V. Liman Klein "Shilo Well"

DRILLER _____ Completed _____ 19__

TOPO SITUATION _____ USHST SPOT Elev 3685

DEPTH _____ ft ☐ Rept ☐ Meas Use Stock

CASING 6 in to _____ ft Log _____

PUMP: Type piston Make _____

Ser.no./model _____ Size of dischg 2 in.

PRIME MOVER: Make Aermotor HP _____

Ser.no. Steel angle iron tower Power/Fuel Wind

PUMP DRIVE: ☐ Gear Head ☐ Belt Head ☐ Pump Jack

Make _____ Ser.no _____ ☐ VHS

WATER LEVEL: 62.76 ft (rept) (meas) 3/8 1961 above (below) Top of 6" x 3" wooden clamp

_____ which is 1.2 ft (above) (below) LS

PERMANENT RP is T. Casing

which is 0.25 ft (above) (below) described MP and 0.95 ft (above) (below) LS

REMARKS Well discharges into a 15' diameter

AQUIFER(S): Tog 323545103285701

Well No. ___ on Photo _____ DPN 25-10404

FWL No. L-4158 20.35.5.31424

Remarks cont. x 12' tall storage tank S of well. Two 10' diameter x 1.5' tall steel tanks are located 12' NE of 15' diameter tank. a 12' diameter x 8' tall steel storage tank is located 10' east of well. Need 4-wheel drive to get to well. 10-23-79 RLT Collected water sample.

SKETCH:

11-27-79 I.H RESAMPLE

N ↑ ✱ July 3, 91, KD-SD - RP is also Top of 55 gal. barrel filled with concrete 0.03 ft below Top of casing and 0.75 ft abv. 6½x6½ concrete slab.

9/14/95 - BRING 4X4 S^2

The 15' x 12' storage tank we discharges into has hardly no water Bottom is not completely covered w/water, two small stk tanks to E of this storage tank's contain ± 6" of water each.

INITIAL WATER-LEVEL MEASUREMENT	DEPTH TO WATER			
	Below MP			Below LS
	1st	2nd	3rd	
Date Mar 8, 1961	65.00	66.00		62.76
Hour ____ AM PM Obs H1-BP	2.22	3.24		1.20
Not POA ( ) POA ( )	62.78	62.76		61.56

W L meas after pump shut off ____ min. Pumping W L ( )

Remarks Well pumped recently.

STATE ENGINEER
Technical Division

Owner Federal / Use Stock	DEPTH TO WATER Below MP 1st	Below MP 2nd	Below LSD	WATER LEVEL ELEV
Date March 8, 19 61	65.00	66.00	62.77	3685
Hour ____ AM/PM Obs HL-BP	2.22	3.24	1.20	62
Not POA ( ) POA ( )	62.78	62.76	61.56	3623

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks Well pumped recently.

Date April 6, 19 66	57.00	58.00	55.07	3685
Hour ____ AM/PM Obs GB-PM	1.93	2.93	1.20	54
Not POA ( ) POA ( )	55.07	55.07	53.87	3631

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks

Date January 21, 19 71	60.00	58.00	55.78	3685
Hour 1145 (AM)/PM Obs HWP KEO	4.22	2.22	1.20	55
Not POA ( ) POA (X)	55.78	55.78	54.58	3630

W L meas after pump shut off 35 min. Pumping W L ( )
Remarks Shut off at 11:28AM Same MP

Date JAN 29, 19 76				
Hour 2:40 AM/PM Obs PRF				
Not POA ( ) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks Need 4 W.D. to get to well

Latitude ____ Longitude DPN 25-10404
File No ____ Location No 20.35.5.31424

Feb. 19, 1976 [illegible]
Not POA - 10:45 A.M.

① 60.00
5.24
54.76

② 61.00
6.24
54.76

Elev. 3685
54
3631

54.76
1.20
53.56

8.00

59.00
4.97
54.03

STATE ENGINEER
Technical Division

Owner V. L. Klein	DEPTH TO WATER			WATER
Use Stock	Below MP 1st	Below MP 2nd	Below LSD	LEVEL ELEV
Date Feb 19, 1976	60.00	61.00	54.76	3685
Hour 10 45 AM PM Obs RM Hoff	5.24	6.24	1.20	54
Not POA (X) POA ( )	54.76	54.76	53.56	3631

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks _____

Date Feb 17, 1981	58.00	59.00	54.60	3685
Hour 4:26 AM PM Obs GS & AM	3.40	4.39	1.20	53
Not POA (X) POA ( )	54.60	54.61	53.40	3632

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks NEED 4WD - OR A LOT of EFFORT!

Date April 2, 1986 RLTT	59.00	55.00	54.03	3685
Hour 1:45 AM PM Obs ABM	4.97	0.97	1.20	53
Not POA (X) POA ( )	54.03	54.03	52.83	3632

W L meas after pump shut off _____ min. Pumping W L ( )
Remarks _____

X Date July 3, 1991	57.00	58.00	55.18	3685
Hour 10:54 AM PM Obs KD-SD	1.82	2.82	0.95	54
Not POA ( ) POA (X)	55.18	55.18	54.23	3631 ✓

W L meas after pump shut off 55 min. Pumping W L ( )
Remarks Intv. betwn 1st & 2nd MEAS. 5 MINS
Shut off at 9:59

Latitude _____ Longitude DPN 25-10404
File No L-11158 Location No 20.35.5.31424

STATE ENGINEER
Technical Division

Owner	DEPTH TO WATER Below MP 1st	2nd	Below LSD	WATER LEVEL ELEV
Use STK				
X Date JAN 25, 19 96	65.00	65.00	54.43	3685
Hour 1:15 AM (PM) Obs PF	10.56	10.57	0.95	53
Not POA ( ) POA (X) 1ST ✓ on 2nd 3rd	54.44	54.43	53.48	3632'

W L meas after pump shut off 30 min. Pumping W L ( )
Remarks MP = TC See note. Wm was not pumping any water on arrival bad leathers?

Date ____ ____, 19 ____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks ____

Date ____ ____, 19 ____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks ____

Date ____ ____, 19 ____				
Hour ____ AM PM Obs ____				
Not POA ( ) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks ____

Latitude ____ Longitude 25-10404
File No ____ Location No 20.35.5.31424

QUALITY CONTROL SHEET — STATE ENGINEER

Date	Collector	POC	Remarks and Use	Cl.	SC	X
6/18/90	KF	EDP	SK POA 66°	350	3939	
9/14/95	JZ	DP	POA NO TEMP. #4	230	3220	

X= More Complete Analysis Available on Sample

Aquifer(s) Tog D.P.N 25-10404

File No. [illegible] Location No. 20.35.5.31424

FE-1

State of New Mexico
State Engineer

WELL SCHEDULE

Source of data: Obser [X] Owner [ ] Other ____

Date 7-3 1991 Record by K. O'Hare, S. Dorman

LOCATION: County Lea Map 107.44

OWNER Mrs. Virgil Linam Klein

DRILLER ____ Completed ____ 19__

TOPO SITUATION ____ ____ Elev spot 3679

DEPTH ____ ft [ ] Rept [ ] Meas Use Aban. Stock

CASING 6 5/8 in to ____ ft Log ____

PUMP: Type None Make ____

Ser.no./model ____ Size of dischg ____ in.

PRIME MOVER: Make ____ HP ____

Ser.no. ____ Power/Fuel ____

PUMP DRIVE: [ ] Gear Head [ ] Belt Head [ ] Pump Jack

Make ____ Ser.no ____ [ ] VHS

WATER LEVEL: dry ft rept/meas July 3 1991 above/below ____

____ which is ____ ft above/below LS

PERMANENT RP is ____

which is ____ ft above/below described MP and ____ ft above/below LS

REMARKS 8' W From 8' tall by 20' diam 67' west of

AQUIFER(S): ____

Well No. ____ on Photo ____ DPN ____

FR No ____ Loc No 20.35.6.33133

(measured)

Remarks cont. windmill. Shown on topo Linam well. Sampled by Ramone 10-23-79 Shown on 107.4.4 at 331313

SKETCH:

N

INITIAL WATER-LEVEL MEASUREMENT	DEPTH TO WATER			
	Below MP			Below LS
	1st	2nd	3rd	
Date July 3, 19 91		Dry		
Hour ____ AM PM Obs KO-SD				
Not POA (X) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )

Remarks ____

QUALITY CONTROL SHEET — STATE ENGINEER

Date	Collector	POC	Remarks and Use	Cl.	SC	X
10/23/79	RLT	Leak	Stock - WM. POA	B76	5154	

X- More Complete Analysis Available on Sample

Aquifer(s) _____ D.P.N _____

File No. _____ Location No. 20.35.6.33133

FE-1 State of New Mexico
State Engineer

WELL SCHEDULE

Source of data: Obser ☒ Owner ☐ Other _____

Date 3/8 19 61 Record by Lobley - Pulley

LOCATION: County Lea Map 107.4.0

OWNER Mrs. Virgil Finam Klein

DRILLER W.F. Van Noy Completed 12/13 19 59

TOPO SITUATION _____ USGS T Elev 3678

DEPTH 70 ft ☒ Rept ☐ Meas Use Not

CASING 5 in to 70 ft Log Drillers

PUMP: Type None Make _____

Ser.no./model _____ Size of dischg _____ in.

PRIME MOVER: Make _____ HP _____

Ser.no. _____ Power/Fuel _____

PUMP DRIVE: ☐ Gear Head ☐ Belt Head ☐ Pump Jack

Make _____ Ser.no _____ ☐ VHS

WATER LEVEL: 60.25 ft rept (meas) 3/8 19 61 above (below) TC

_____

_____ which is 1.55 ft (above) below LS

PERMANENT RP is _____

_____

_____

_____

which is _____ ft above below described MP and _____ ft above below LS

REMARKS Well is located 65' east of windmill

AQUIFER(S): Tog 323536 1033011 01

Well No. ___ on Photo _____ DPN 25-10405

File No. L-4157 20.35.6.331332

Remarks cont. Shown

5

SKETCH:

N

INITIAL WATER-LEVEL MEASUREMENT	DEPTH TO WATER			
	Below MP			Below LS
	1st	2nd	3rd	
Date Mar 8, 1961	70.00	71.00		60.25
Hour ____ AM PM Obs HEL	9.74	10.75		1.55
Not POA (X) POA ( )	60.26	60.25		58.70

W L meas after pump shut off ____ min. Pumping W L ( )

Remarks

STATE ENGINEER
Technical Division

Owner Virgil Linam / Use not in use	DEPTH TO WATER Below MP 1st	Below MP 2nd	Below LSD	WATER LEVEL ELEV
Date March 8, 1961	70.00	71.00	60.25	3678
Hour ____ AM PM Obs HL-BP	9.74	10.75	1.55	59
Not POA (X) POA ( )	60.26	60.25	58.70	3619

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks ____

Date March 2, 1966				
Hour ____ AM PM Obs GWB				
Not POA ( ) POA ( )				

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks U.T.M. 3-10-66 GWB UTM
Need 4 wheel drive to get to well.

Date January 21, 1971	65.00	66.00	59.13	3678
Hour 11:00 AM PM Obs KEP HWP	5.87	6.87	1.55	58
Not POA (X) POA ( )	59.13	59.13	57.58	3620

W.M. shut off 12"
W L meas after pump shut off ____ min. Pumping W L ( )
Remarks M.P. top csg. E. side. This is 0.63' above present L.S. Is loc. 60'-65' E of equipped, operating mill

Date Feb 19, 1976	63.00	64.00	62.79	3678
Hour 1:45 AM (PM) Obs RMT Hart	0.21	1.21	1.55	61
Not POA (X) POA ( )	62.79	62.79	61.24	3617

W L meas after pump shut off ____ min. Pumping W L ( )
Remarks Same MP

Latitude ____ Longitude DPN 25-10405
File No L-419 Location No 20.35.6.33133

STATE ENGINEER
Technical Division

Owner / Use	DEPTH TO WATER Below MP 1st	DEPTH TO WATER Below MP 2nd	Below LSD	WATER LEVEL ELEV
Date April 2, 1986	65.00	60.00	58.46	3678
Hour 1:30 PM Obs RLT ABM	6.54	1.53	1.55	57
Not POA (X) POA ( )	58.46	58.47	56.91	3621

W L meas after pump shut off ______ min. Pumping W L ( )
Remarks ______

Date July 3, 1991	60.00	61.00	58.50	3678
Hour 11:20 AM Obs KD.SD	1.50	2.50	1.55	57
Not POA (X) POA ( )	58.50	58.50	56.95	3621 ✓

W L meas after pump shut off ______ min. Pumping W L ( )
Remarks New equip. with steel pipe tower & Aermotor mill. Disch. 47' west into 20' dia. x 8'

Date March 5, 1996	79.00	74.00	57.94	3678
Hour 11:50 AM Obs PF	21.06	16.06	1.55	56
Not POA ( ) POA (X)	57.94	57.94	56.39	3622 ✓

1st
W L meas after pump shut off 25 min. Pumping W L ( )
Remarks Brake held good

Date ______, 19__				
Hour ______ AM PM Obs ______				
Not POA ( ) POA ( )				

W L meas after pump shut off ______ min. Pumping W L ( )
Remarks ______

Latitude ______ Longitude 25-10405

File No L-4157 Location No 20.35.6.331332

Appendix E: USGS Protocol

GWPD 17—Conducting an Instantaneous Change in Head (Slug) Test with a Mechanical Slug and Submersible Pressure Transducer

VERSION: 2010.1

PURPOSE: To obtain data from which an estimate of hydraulic conductivity of an aquifer can be calculated.

During a slug test the water level in a well is changed rapidly, and the rate of water-level response to that change is measured. From these data, an estimate of hydraulic conductivity can be calculated using appropriate analytical methods (for example, Ferris and Knowles, 1963).

A slug test requires a rapid ("instantaneous") water-level change and measurement of the water-level response at high frequency. A rapid change in water level can be induced in many ways, including injecting or withdrawing water, increasing or decreasing air pressure in the well casing, or adding a mechanical device like a plastic rod to displace water. The water-level changes can be measured with many methods, including steel tape, electric tape, air line, wireline/float, and submersible pressure transducers.

One of the most common methods in use is displacement of water with a mechanical slug, measurement of water levels with a submersible pressure transducer, and recording water levels with a data logger. This method combines ease of use, accuracy, and rapidity of water-level measurement. This document describes the mechanical slug/pressure transducer method. This technical procedure can be used with slight modifications if other approaches are used to instantaneously change the water level or measure water-level change.

Materials and Instruments

1. Tools or key to open the well.
2. Field notebook; Pencil or pen, blue or black ink. Strike-through, date, and initial errors; no erasures.
3. Well-construction diagram.
4. Data logger and submersible pressure transducer. A 10-pound-per-square-inch (psi) pressure transducer commonly is used for slug tests because it combines adequate accuracy with an acceptable range of measurement.
5. Slug of polyvinyl chloride (PVC) or other relatively inert material (fig. 1). A slug of solid PVC (fig. 1*C*) is ideal because PVC caps (fig. 1*A*) can catch the well casing during insertion, and PVC plugs (fig. 1*B*) can come loose during the rapid removal of the slug.

   Select the largest diameter and length of slug that will fit in the well without disturbing the transducer. The slug should have a displacement that will provide an adequate change in water level. The slug should displace enough water to provide a measurable change in water level, but not so large as to significantly increase the saturated thickness of the aquifer, disturb the transducer, or affect the speed at which one can raise or lower the slug. A water-level rise between 0.5 and 3 feet (ft) often is adequate. In low permeability formations, a smaller displacement will take less time for full recovery. In high permeability formations (1 to 100 ft per day), a larger displacement is desirable and practical. This usually can be generated with a slug diameter about 1 inch less than the well diameter and a length of 3 ft or more (lengths greater than 5 ft are awkward to handle in the field). Tables 1 and 2, respectively, provide theoretical displacement volumes for various slugs and volumes necessary for specific water-level changes.
6. Nylon cord or other strong line of sufficient length to reach below the water level in order to secure the slug.
7. Wooden rod, or 2 by 4 to secure the slug line.
8. Tripod or other device to support the slug line (optional).
9. Bungee cord or other device to secure the transducer cable and support line.
10. Water level measuring device (steel or electric tape).
11. Appropriate decontamination equipment, if necessary.
12. Field computer (optional).
13. Stopwatch (optional).

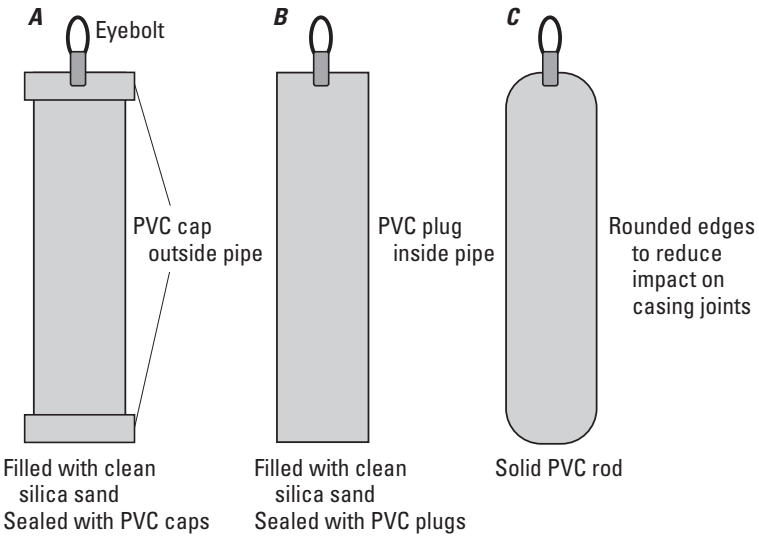

Figure 1. Polyvinyl chloride (PVC) plastic slug. *A*, Solid 2-inch PVC pipe with external cap. *B*, Solid 2-inch PVC pipe with internal plug. *C*, Solid 2-inch PVC rod.

Table 1. Slug displacement volume, in cubic feet, for a specific slug diameter and length.

Slug length (feet)	Slug diameter (inches)						
	1	1.5	2	2.5	3	3.5	4
2	0.011	0.025	0.044	0.068	0.098	0.134	0.175
3	0.016	0.037	0.065	0.102	0.147	0.200	0.262
4	0.022	0.049	0.087	0.136	0.196	0.267	0.349
5	0.027	0.061	0.109	0.170	0.245	0.334	0.436
6	0.033	0.074	0.131	0.205	0.295	0.401	0.524

Table 2. Volume of water, in cubic feet, required to raise the water level a prescribed distance within a specific well diameter.

Well diameter (inches)	0.3-foot rise	0.5-foot rise	1-foot rise	1.5-foot rise	2-foot rise	3-foot rise
2	0.007	0.011	0.022	0.033	0.044	0.065
3	0.015	0.025	0.049	0.074	0.098	0.147
4	0.026	0.044	0.087	0.131	0.175	0.262
6	0.059	0.098	0.196	0.295	0.393	0.589
8	0.105	0.175	0.349	0.524	0.698	1.047
10	0.164	0.273	0.545	0.818	1.091	1.636

Data Accuracy and Limitations

1. The accuracy of a slug test is a function of many factors, including well construction, field procedures, and analysis method. Rapidly changing the water level in a well can be done by submerging an object (slug) in the water, causing the water level to rise instantaneously. Displaced water will move from the well to the geologic formation until the hydraulic head falls to the original static or equilibrium level. This is called a falling head test or "slug in test." After the water level reaches equilibrium, quickly removing the slug causes the water level to fall instantaneously. Water will move from the formation into the well until the hydraulic head returns to the equilibrium level. This is called a rising head test, "slug-out test," or bailer test. Because the early-time data for these tests are most important for the subsequent analysis, the data logger should begin collecting data just before the slug is submerged or removed from the well. The initial time can be adjusted during analysis, but the logger must be collecting data at a frequency of at least several samples per second when the water level begins to change. After the first minute or two of data collection, the sampling interval can be increased. Data loggers designed for aquifer tests and slug tests frequently have internal programs that allow for rapid data collection at early time and gradual increase of the sampling interval over time (a logarithmic time scale).
2. Some transducers have more rapid recording rates than others. If the slug test is being done in a formation of high hydraulic conductivity, select a transducer that can transmit at very small time increments (tenths of a second).
3. Due to the accuracy limitations of slug tests, results should be reported to one significant figure.

Advantages

1. Potentially contaminated water requiring special disposal is not removed from the well.
2. The slug test can be conducted quickly and is therefore relatively inexpensive.
3. Only one well is needed for the test (no need for other observation wells), and a pump is not required.
4. Because the slug-test data to be analyzed for an estimate of hydraulic conductivity are collected within a few minutes of the test initiation, this technique can be used near pumped wells or where well interference is expected, as long as the expected water-level changes occur slowly in comparison to the time for which the slug-test data will be analyzed.

Disadvantages

1. The collected data represent only a small volume of aquifer material near the tested well.
2. The test may be influenced by the well filter pack, skin effects, or poor well development.

Assumptions

1. Operator is familiar with the operation of data loggers and submersible pressure transducers. The data logger/transducer can measure and record at a high frequency (less than or equal to one second in highly transmissive formations).
2. The well is free of obstructions which might hinder water-level measurement or introduction or removal of the mechanical slug.
3. The water level is easily accessible from the surface (within approximately 100 ft) and is within the length of the transducer cable.
4. Column of water in the well is long enough to cover the transducer and the slug.
5. The well is properly constructed and developed.
6. Well construction details such as well depth, screen length, borehole radius, filter pack, and well radius are known.
7. The hydraulic conductivity of the aquifer is not extremely low. A slug test is an acceptable method in low-permeability formations, but a transducer may not be necessary in this situation. The water level in the well should recover within minutes or hours for this procedure.

Instructions

1. Confirm well identification with well-construction diagram.
2. Measure the total depth of the well (see GWPD 11).
3. Measure the water level in the well (see GWPD 1 or GWPD 4). This should be repeated at the end of the test for long duration slug tests. The column of water in the well should be long enough to cover the transducer and the slug.
4. Document the static water level, well diameter, well depth, and screened interval in field notebook. The diameter of the hole, nature of filter pack, and type of screen also are documented, if known.

5. Place the transducer in the well below the level at which the slug will be submerged, but not so low that the range of transducer might be exceeded at the highest anticipated water level. Secure the transducer in place. The transducer should not move during the test.

6. Measure (estimate) the maximum length of slug line that will be used. This length should allow the slug to completely submerge, about 1 ft below water surface.

7. Allow the transducer to adjust to the new pressure and temperature following manufacturer's guidance. This also provides time for the water level to recover prior to the test.

8. If needed, set up a tripod or some other device from which the slug can be lowered and raised in the well. Lower the clean, decontaminated slug to a point just above the water level and secure it in place. Take care not to move or kink the transducer line (fig. 2*A*). A simple approach of securing the slug is to tie a loop of cord that would hold the slug about 1 ft above the water surface and then tie off a second loop at the length of cord required for the entire slug to submerge. Put both of these loops over a rod or a wooden 2 by 4 that can rest across the top of the well casing.

9. Prepare the data logger. The data logger should be set to record data as frequently as possible during the first minutes of the test, and it can be set to record less frequently during later time. Recording in seconds on a logarithmic time scale meets this objective.

10. Establish a starting water level for the transducer and data logger. Data analysis is based on the change in water level rather than a comparison to a standard datum. The transducer starting water level can be set to zero, a value equal to the head of water above the transducer, or any other value.

Slug In Test

11. Begin the test by starting the data logger and nearly simultaneously submerging the slug quickly but gently into the water to minimize disturbance at the water surface or movement of the transducer cable (fig. 2*B*). Secure the slug cord to the wooden rod to maintain its position below the water level.

12. After 1 minute and periodically thereafter, check the status of the water-level reading with the data logger/transducer or with a water-level measuring tape.

13. When the water level is equal to the initial water level, or when readings change less than 0.01 ft per 10 minutes, stop the test. This is the end of the falling head, or slug in test. You are now ready to begin the rising head, or slug out test.

Slug Out Test

14. Establish a starting water level for the transducer and data logger. Data analysis is based on the change in water level rather than a comparison to a standard datum. The transducer starting water level can be set to zero, a value equal to the head of water above the transducer, or any other value.

15. Prepare the data logger. The data logger should be set to record data as frequently as possible during the first minutes of the test, and it can be set to record less frequently during later time. Recording in seconds on a logarithmic time scale meets this objective.

16. Begin the test by starting the data logger and nearly simultaneously withdrawing the slug quickly but gently from the water to minimize disturbance at the water surface or movement of the transducer cable. The slug need not be withdrawn completely out of the well, but should

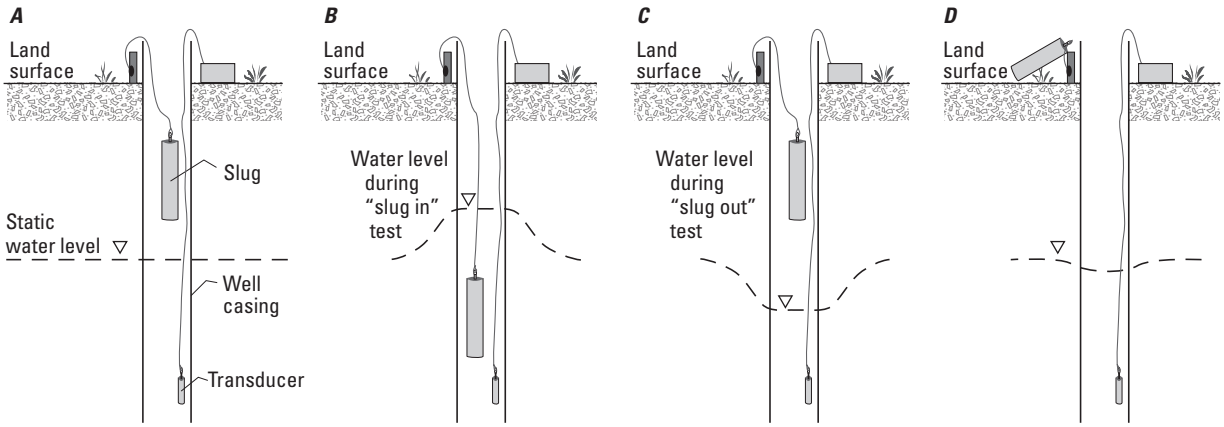

Figure 2. Well diagram with polyvinyl chloride (PVC) plastic slug (*A*) poised just above the water level for falling head or slug in test, (*B*) submerged below the water level for falling head or slug in test, (*C*) removed just above the water level for rising head or slug out test, and (*D*) removed from the well for rising head or slug out test.

be out of the water (fig. 2*C* or 2*D*). Secure the slug cord to the wooden rod to maintain its position above the water level.

17. After 1 minute and periodically thereafter, check the status of the water-level reading with the data logger/transducer or with a measuring tape.

18. When the water level is equal to the initial water level, or when readings change less than 0.01 ft per 10 minutes, stop the test. This is the end of the rising head, or slug out test.

19. Review the data for completeness and accuracy. This can be done on the data logger or on a field computer (preferred). Optionally, the test can be analyzed in the field on a field computer using aquifer test software.

20. Repeat the entire procedure at least once as time permits, so two complete sets of falling and rising head test data are collected (four tests).

Data Recording

1. All calibration and maintenance data associated with the data logger, steel or electric tape, and submersible pressure transducer are recorded in calibration and maintenance equipment logbooks.

2. Complete a field report with date, time, well identifier, type of test (rising or falling head), composition and dimensions (or volume) of the slug, and the name of data files. (Use site ID or well name, date, and year in the file name: for example, 424531077564201.19960101, or Well8.19960101).

3. Data are downloaded to an office computer for processing. Results are interpreted and submitted for Bureau approval. Original data are stored in the office aquifer test archive, and result is recorded on the Ground-Water Site Inventory form (fig. 3, Form 9-1904-D1).

FORM NO. 9-1904-D1
Revised January 2010, NWIS 4.9

Coded by _____ File Code _____
Checked by _____ Date _____
Entered by _____ Regional approval date _____

U.S DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY

GROUNDWATER SITE INVENTORY
Hydraulics Data

AGENCY CODE (C4) | SITE ID (C1)

RECORD TYPE (C744) H Y D R | RECORD SEQUENCE NO. (C790)

HYDRAULIC UNIT IDENTIFIER (C100) | DEPTH TO TOP OF INTERVAL (C101) . | DEPTH TO BOTTOM OF INTERVAL (C102) .

HYDRAULICS UNIT TYPE (C103) A C
aquifer, confining unit

REMARKS - Method of determining hydraulics data (C104)

HYDRAULICS SOURCE AGENCY (C305)

WEB-READY FLAG (C874) Y C P L
ready to display, conditional, proprietary, local use only

RECORD TYPE (C746) C O E F | SEQUENCE NO. OF PARENT RECORD (C99) | RECORD SEQUENCE NO. (C106)

TRANSMISSIVITY(C107)

HORIZONTAL CONDUCTIVITY (C108) . | VERTICAL CONDUCTIVITY (C109) .

STORAGE COEFFICIENT (C110) . | LEAKANCE (C111) .

DIFFUSIVITY (C112) | SPECIFIC STORAGE (C113) .

BAROMETRIC EFFICIENCY (Percent) (C271) | POROSITY (C306) .

WEB-READY FLAG (C875) Y C P L
ready to display, conditional, proprietary, local use only

Figure 3. Groundwater Site Inventory for Hydraulics Data, Form 9-1404-D1.

Procedures References

Cunningham, W.L., and Schalk, C.W., comps., 2011a, Groundwater technical procedures of the U.S. Geological Survey, GWPD 1—Measuring water levels by use of a graduated steel tape: U.S. Geological Survey Techniques and Methods 1–A1, 4 p.

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Method References

American Society for Testing of Materials, 1991, ASTM Method D4044-91: Philadelphia, Pennsylvania, American Society for Testing of Materials.

Ferris, J.G., and Knowles, D.B., 1963, The slug-injection test for estimating the coefficient of transmissibility of an aquifer, *in* Bentall, Ray, comp., Methods of determining permeability, transmissibility, and drawdown: U.S. Geological Survey Water-Supply Paper 1536–I, p. 299–304.

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Analysis References

Bouwer, Herman, 1989, The Bouwer and Rice slug test—An update: Ground Water, v. 27, no. 3, p. 304–309.

Bouwer, Herman, and Rice, R.C., 1976, A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells: Water Resources Research, v. 12, no. 3, p. 423–428.

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Dawson, K.J., and Istok, J.D., 1991, Aquifer testing—Design and analysis of pumping and slug tests: Chelsea, Michigan, Lewis Publishers, 344 p.

Halford, K.J., and Kuniansky, E.L., 2002, Documentation of spreadsheets for the analysis of aquifer-test and slug-test data: U.S. Geological Survey Open-File Report 02–197, 54 p. (Also available at *http://pubs.usgs.gov/of/2002/ofr02197/*.)

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HydroSOLVE, Inc., 1998, AQTESOLV for Windows User's Guide: Reston, Virginia, HydroSOLVE, 128 p.

Krusman, G.P., and deRidder, N.A., 1990, Analysis and evaluation of pumping test data (2d ed.): Wageningen, The Netherlands, International Institute for Land Reclamation and Improvement, 377 p.

Fw: [EXTERNAL] RE: West Pearl Queen; incident #: NOY1816446096

rhillman <rhillman@aecnm.com>
Fri 7/19/2024 7:10 AM
To:sdutton <sdutton@aecnm.com>
Cc:kaa <kaa@aecnm.com>

1 attachments (13 MB)
2024-07-02_WPQ_Workplan_Submittal(1).pdf;

Shelby:

Would you be so kind as to submit the attached plan to the OCD through the portal? At your earliest convenience. Please include the email below from Nelson Valdez.

Thanks!
Ron

From: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Sent: Thursday, July 18, 2024 2:41 PM
To: Christopher Cortez <chris@atkinseng.com>; Austin Weyant <austin@atkinseng.com>
Cc: rhillman <rhillman@aecnm.com>; kaa <kaa@aecnm.com>; Romero, Rosa, EMNRD <RosaM.Romero@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Buchanan, Michael, EMNRD <Michael.Buchanan@emnrd.nm.gov>
Subject: Re: [EXTERNAL] RE: West Pearl Queen; incident #: NOY1816446096

[CAUTION: This email originated from outside Armstrong Energy Corp. Do not click links or open attachments unless you recognize the sender and know the content is safe]

Good afternoon Chris,

Thank you for inquiry. Your time extension request is hereby approved. Remediation Due date has been updated to October 29, 2024.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

OCD requires that Armstrong Energy provide us with an update of the soil remediation upon completion. In addition, any water data generated must be provided as well. Please submit within Permitting under the groundwater abatement portal.

A time extension may be requested in order to complete the Stage 1 abatement plan required.

If you have any further questions or concerns, please reach out to any OCD personnel attached in this thread.

Have a safe and productive day!

Regards,

Nelson Velez • Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
1000 Rio Brazos Road | Aztec, NM 87410
(505) 469-6146 | nelson.velez@emnrd.nm.gov
http://www.emnrd.nm.gov/ocd

From: Christopher Cortez <chris@atkinseng.com>
Sent: Friday, June 28, 2024 3:25 PM
To: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>; Austin Weyant <austin@atkinseng.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Cc: rhillman@aecnm.com <rhillman@aecnm.com>; kaa <kaa@aecnm.com>; Romero, Rosa, EMNRD <RosaM.Romero@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Subject: [EXTERNAL] RE: West Pearl Queen; incident #: NOY1816446096

Nelson,

Armstrong Energy Corporation is requesting an extension for the current deadline of July 1, 2024 for Remedial Closure.
Armstrong Energy is requesting an additional 120 days (October 29, 2024)
It is Armstrong Energy Corporation's desire to comply with Divisions request for a comprehensive Stage 1 Abatement Plan proposal to be submitted to the director for her review.

After extensive review of the available data and site conditions, we believe our proposed initial actions and the stabilization of the site through remedial soil closure is a necessary step, to provide that comprehensive plan. A workplan for these initial actions will be submitted no later than July 2, 2024 (we are coordinating with AEC staff who are traveling today), and additional time will be needed for NMOCD review and scheduling of work so proper excavation for remedial closure can be completed.

AEA has blocked time for its drill crew in September 2024 (earliest available based on contracted obligations) to properly abandon the portions of the existing temporary monitoring well network –once receiving OCD approval. Prior to that sampling and other data collection work will be performed in late August. We believe that this will give enough time to complete the remedial closure process under NMAC 19.25.29 by late October, as requested.

Once the initial work and data is collected, we believe a full Stage 1 Abatement Plan can be completed in Late 2024 or 1st quarter 2025, with the full investigation to occur in 2025.

Thanks for your consideration,

Chris Cortez
575.914.0174

From: Velez, Nelson, EMNRD <Nelson.Velez@emnrd.nm.gov>
Sent: Wednesday, May 1, 2024 9:07 AM
To: Austin Weyant <austin@atkinseng.com>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Cc: Christopher Cortez <chris@atkinseng.com>; rhillman@aecnm.com; kaa <kaa@aecnm.com>; Romero, Rosa, EMNRD <RosaM.Romero@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>; Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>
Subject: Re: [EXTERNAL] RE: West Pearl Queen; incident #: NOY1816446096

Good morning Austin,

Your 60-day time extension request is approved. Remediation Due date has been updated to July 1, 2024.

Please keep a copy of this communication for inclusion within the appropriate report submittal.

Regards,

Nelson Velez • Environmental Specialist - Adv
Environmental Bureau | EMNRD - Oil Conservation Division
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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 365911

CONDITIONS

Operator: ARMSTRONG ENERGY CORP P.O. Box 1973 Roswell, NM 88202	OGRID: 1092
	Action Number: 365911
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record.	10/28/2024