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2021 EMPIRE ABO GAS PLANT (AP-112)
Groundwater Monitoring and Remediation Report
Eddy County, New Mexico

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1.0 EXECUTIVE SUMMARY

This report presents 2021 annual groundwater monitoring and remediation for the Empire Abo Gas Plant (Facility) and is submitted to the New Mexico Oil Conservation Division (NMOCD) Environmental Bureau on behalf of Aka Energy Group LLC (Aka Energy). Frontier Field Services LLC, an affiliate of Aka, was the previous operator and was sold to Durango Midstream Services, LLC, on March 1, 2019. Aka Energy retained liability for certain environmental conditions at the Facility including groundwater monitoring and remediation. The Facility is located approximately 9 miles east and southeast of Artesia, New Mexico. The legal description is Unit I (NE/4, SE/4), Section 3, Township 18 South, Range 27 East, Eddy County, New Mexico. The geodetic position is North 32.777056° and West -104.259083°.

This report presents the results of semi-annual (twice yearly) groundwater monitoring and remediation of light non-aqueous phase liquid (LNAPL) and groundwater during 2021. The following activities occurred during 2021:

- February 2 – 6, 2021 – EcoVac performed LNAPL and groundwater remediation at seven (7) wells (MW-02-10, MW-02-11, MW-04, MW-10, MW-21, MW-23, and EB-08).
- April 19 – 23, 2021 – EcoVac performed LNAPL and groundwater remediation at four (4) wells (MW-02-10, MW-02-11, MW-04, and MW-10).
- April 26 - 28, 2021 – first (1st) 2021 semi-annual monitoring event with depth to groundwater and LNAPL thickness gauged in fifty-five (55) monitoring wells, recovery well AS-1, and groundwater sample collection from fifteen (15) monitoring wells.
- June 15 – 19, 2021 – EcoVac performed LNAPL and groundwater remediation at eleven (11) wells (MW-02-06, MW-02-09, MW-02-12, MW-02-14, MW-02-15, MW-03, MW-03-02, MW-03- 03, MW-14, MW-21, EB-03, and EB-08).
- January 4 – 5, 2022 – second (2nd) 2021 semi-annual monitoring event where depth to groundwater and LNAPL thickness was gauged in fifty-five (55) monitoring wells and one recovery well (AS-1) and groundwater samples were collected from fifteen (15) monitoring wells.
- January 4 – 7, 2022 – EcoVac performed LNAPL and groundwater remediation at four (4) wells (MW-21, MW-02-12, MW-02-15, and MW-4).

Findings:

- Mounding of shallow groundwater on laterally discontinuous clay and silty clay unit near the north central and east areas of the Facility causes groundwater to flow in a radial pattern.
- The regional groundwater flow direction remains to the southeast.
- LNAPL was observed in sixteen (16) monitoring wells during the first (1st) semi-annual monitoring event (April 26 – 28, 2021), and in eleven (11) monitoring wells during the second (2nd) semi-annual monitoring event (January 4 – 5, 2022).
- Monitoring wells MW-03 and MW-23 contained LNAPL therefore no samples were collected on April 27 – 28, 2021 and January 4 – 5, 2022.
- Monitoring wells EB-07 and P-05 were dry therefore no samples were collected on April 27 – 28, 2021 and January 4 – 5, 2022.
- Monitoring well EB-06 has typically been used as the up-gradient monitoring well for the Facility was dry during the second (2nd) semi-annual event on January 4 – 5, 2022.

- Benzene decreased below the WQCC human health standard (0.01 mg/L) in all but two (2) monitoring wells (MW-22, and MW-24) under the current groundwater monitoring program during 2021.
- Benzene in well MW-22 decreased from 5.63 mg/L (April 27, 2011) to 1.58 mg/L (January 4, 2022).
- Benzene in well MW-24 with concentrations of 2.37 mg/L (April 28, 2021) and 2.33 mg/L (January 5, 2022) and appears stable following SVE remediation at well EB-08.
- Ethylbenzene, toluene, and xylenes were below the WQCC human health standards in groundwater samples during 2021.
- Chloride exceeded the WQCC domestic water quality standard (250 mg/L) in samples from three (3) monitoring wells (MW-08, MW-15, and MW-18) with concentrations ranging from 530 mg/L (MW-08) to 3,200 mg/L (MW-15) which is consistent with the previous monitoring periods.
- Sulfate and TDS exceeded the WQCC domestic water quality standards of 600 mg/L and 1,000 mg/L, respectively, in all samples during the first semi-annual monitoring event (April 27 – 28, 2021).
- The highest sulfate (47,200 mg/L) and TDS (106,000 mg/L) concentrations were reported in the groundwater sample from monitoring well MW-15, located north of the Facility, resulting from dissolution of minerals in the Tansill formation.
- Between August 2018 and January 2022 SVE remediation recovered approximately 227,810.1lbs or about 113.9 tons of hydrocarbons vapors, 3,280.2 gallons or 78.1bbl of hydrocarbon liquid and 23,025 gallons or 548.21bbl of water.
- In Staging Area A, located on the west side of the Facility, LNAPL in MW-02-16 was reduced approximately 85 percent with SVE technology from 1.74 feet (October 25, 2017) to 0.27 feet (March 11, 2022). LNAPL was successfully removed and has not returned in wells MW-02-14, MW-03-01, MW-09, MW-11, MW-19, and AS-1. SVE technology achieved 99.85 percent reduction in LNAPL thickness in well MW-06 from 13.39 feet (September 15, 2008) to 0.02 feet (March 10, 2022). SVE technology successfully reduced LNAPL between about 96.14 and 99.92 percent in wells MW-02-09 and MW-10 from a maximum thickness of 11.42 feet in MW-02-09 (September 14, 2009) and 25.42 feet in MW-10 (July 31, 2008) to 0.38 feet (MW-02-09) and 0.20 feet (MW-10) on March 11, 2022.
- LNAPL in Staging Area B, located on the east side of the Facility, was reduced 100 percent in monitoring wells MW-02-06, MW-02-10, MW-02-11, MW-03-03, MW-03-04, MW-04, MW-13, MW-20, and EB-03.
- The most liquid (hydrocarbons and water) was recovered from the west side of the Facility (Staging Area A), south and southeast of the Facility in the vicinity of wells MW-02-13, MW-03- 02 and MW-06.

Aka requests approval for the following:

- Approval from NMOCD to discontinue SVE remediation based on the reduction of LNAPL between 85 and 100 percent from pre-remediation thicknesses and technically infeasible to recover the remaining LNAPL.

- Approval from NMOCD to allow residual dissolved benzene in groundwater to naturally attenuate based on demonstrated concentration reductions and no groundwater receptors (i.e., domestic, industrial, livestock) wells within 2 miles as documents by NMOSE.
- Approval from NMOCD to discontinue groundwater monitoring at the Facility
- Conditional closure and release from future liability since Aka no longer owns or operates the Facility.

2.0 INTRODUCTION

This report is submitted to the New Mexico Oil Conservation Division (NMOCD) Environmental Bureau on behalf of Aka Energy Group, LLC (Aka), a wholly owned subsidiary of Southern Ute Indian Tribe Growth Fund (SUGF), for its former Empire Abo Gas Plant (Facility) that was operated by Frontier Field Services LLC (Frontier), an entity of Aka. The Facility is located approximately 9 miles east and southeast of Artesia, New Mexico, in Unit I (NE/4, SE/4), Section 3, Township 18 South, Range 27 East, Eddy County, New Mexico. The geodetic position is North 32.777056° and West -104.259083°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

2.1 Background

Frontier operated the Facility as a gas plant processing natural gas using cryogenic methods to remove simple alkanes (i.e., ethane, propane, pentane, and hexane). The Facility was later converted to a compressor station. On March 1, 2019, Aka sold Frontier including the Facility and gathering system to Durango Midstream Services LLC (Durango). Aka retained liability for certain environmental conditions at the Facility including groundwater monitoring and remediation.

The Facility operated under a New Mexico Water Quality Control Commission (WQCC) discharge permit (GW-022) administered by the NMOCD until the permit was rescinded after Frontier confirmed the Facility did not have intentional discharges other than potable water onto the ground or directly into surface water or groundwater. The NMOCD assigned the Facility abatement permit number AP-112, after rescinding the discharge permit for remediation of groundwater contamination and requested Frontier submit an abatement plan for groundwater contamination. On January 15, 2013, Frontier submitted an abatement plan to the NMOCD that was contingent on approval from the New Mexico Office of the State Engineer (NMOSE) approving Frontier's request to extract groundwater for remediation and disposal contingent upon permitting, installation and start-up of a disposal (SWD or AGI) well permitted through NMOCD. OSE approved Frontier's request on March 8, 2013, concluding that the remediation would not have an impact on the Pecos River and no water wells were known to exist within two (2) miles of the Facility. Appendix A presents the NMOSE communications.

In August 2018, Aka management elected to use the soil vapor extraction (SVE) method rather than recovery wells (pump and dispose) to remediate light non-aqueous phase liquid (LNAPL) in soil and on the groundwater. The groundwater abatement plan ("Groundwater Abatement Plan, Empire Abo Gas Plant, Eddy County, New Mexico") was submitted to NMOCD on January 15, 2013, and amended on March 12, 2018, to use the SVE method for LNAPL and groundwater remediation. NMOCD approved SVE testing for the abatement plan on August 21, 2012, and October 23, 2017. Appendix B presents NMOCD communications.

Previous investigations identified LNAPL in the form of natural gas condensate on groundwater and dissolved benzene in groundwater resulting from historic releases of natural gas condensate from subsurface piping. The LNAPL and dissolved benzene are present in five (5) areas including the northeast, west-central, east-central, southwest, and southeast areas of the Facility. The groundwater

contains naturally elevated concentrations of sulfate and total dissolved solids (TDS) from dissolution of gypsum in the Tansill formation that exceeds the WQCC domestic water quality standards.

On October 23, 2017, NMOCD approved Aka's request to reduce the number of monitoring wells for semi-annual (twice yearly) groundwater sample collection to the following: MW-02, MW-03, MW-08, MW-12, MW-15, MW-17, MW-18, MW-20, MW-22, MW-23, MW-24, EB-02, EB-07, P-02 and P-05. On May 6, 2019, NMOCD approved Aka's request to analyze groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX) during each semi-annual monitoring event and once annually for cations (calcium, magnesium, potassium, and sodium), anions (alkalinity, chloride, and sulfate) and TDS. Figure 3 presents a Facility drawing showing monitoring well locations and highlighted wells for semi- annual groundwater monitoring. Appendix B presents NMOCD communications.

2.2 Physical Setting

2.2.1 Topography and Surface Water

The surface elevation is approximately 3,550 feet above mean sea level (MSL) and slopes to the southeast. The Facility is located approximately 3.4 miles east-northeast from the Pecos River. The nearest drainage is an unnamed wash located west of the Facility. The unnamed wash flows south to Scoggin Draw (aka Coggin Draw on some early maps) located about 1,300 feet south of the Facility. Scoggin Draw flows southwest to ephemeral Chalk Bluff Draw located about three (3) miles downstream. Chalk Bluff Draw flows to the Pecos River located about 1.8 miles further downstream.

When comparing the elevation of Scoggin Draw and the depth to groundwater from the nearest monitoring wells (P-04, EB-07 and EB-01), depth to groundwater is estimated to be about 25 or more feet below the drainage. However, these monitoring wells are currently dry therefore the separation between the base of Scoggin Draw and groundwater may be greater than 25 feet. Scoggin Draw is a losing stream without groundwater affecting surface water or discharging to the surface. There are no documented springs, seeps, or marshes within 1-mile of the outside perimeter of the Facility.

2.2.2 Geology

The dominant regional geological feature is the Pecos Slope; a broad geologic structure with a low eastward dip of about 50 to 100 feet per mile. The western extents of the Pecos Slope are the Mescalero Arch, and Sacramento and Guadalupe uplift structural divides (Kelley, 1971). The eastern extents of the Pecos Slope are the Delaware and Midland Basins. Pecos Slope is a monocline that is imprinted with other structural features, including the southern flank of the Artesia-Vacuum Arch, which reflects the underlying ABO reef trend.

The Artesia-Vacuum Arch extends from beneath the Pecos Valley fill to the west, extending through Townships 17 through 19 south, eastward to Range 35 East in Lea County (Kelley, 1971). The arch is covered by post-Permian strata, except in a 4 to 5-mile stretch near Chalk Bluff Draw. The plunging south limb of Yates Formation and Tansill Formation, in ascending order, dips about 4° South 47° East in

the vicinity of the Facility. Brittle deformation of the Artesia Group members caused fractures that are subject to dissolution by groundwater interaction.

The lowest encountered formation at the Facility is the Permian-age Yates Formation of the Artesia Group. The Yates Formation is named for the Yates oilfield in Pecos County, Texas, and has wide aerial extent in both surface exposures and subsurface wells samples. The Yates Formation is approximately 250 to 350 feet thick and is documented as siltstone north of Roswell, New Mexico, as carbonate and evaporites west and northwest of Carlsbad, as gypsum north of Lake McMillan to near Roswell, and the vicinity of the Facility. Beneath the Facility, red mudstone, shale, and clay reported at the base of monitor well borings represent the top of the Yates Formation.

Above the Yates Formation is the Tansill Formation of the Artesia Group. The type-section for the Tansill Formation is found along US Highway 285 about two (2) miles north of Carlsbad and is reported to be predominantly dolomite. The reef shelf margin is about 300 to 325 feet thick (Kelley, 1971), however, these facies give way to an evaporite facies about ten (10) miles north of the type-section. The Tansill Formation in the vicinity of the Facility is part of an irregularly shaped north-trending belt that is generally less than a mile wide and comprised of anhydrite and salt about 100 feet thick. At the Facility the anhydrite, gypsum and salts of the Tansill Formation appear to be the bulk of the strata encountered in monitor wells and borings.

2.2.3 Groundwater Occurrence

The historic groundwater flow direction is towards the south and southeast and consistent with the surface drainage (Hendrickson and Jones, 1952). During investigations, LAI observed groundwater mounding under the Facility which has locally affected the groundwater flow direction.

3.0 GROUNDWATER MONITORING

3.1 LNAPL Measurements

LNAPL in the form of natural gas condensate was observed in sixteen (16) monitoring wells during the first (1st) semi-annual monitoring event on April 26 through 28, 2020, and in eleven (11) monitoring wells during the second (2nd) semi-annual monitoring event on January 4 – 5, 2022. The following monitoring wells reported LNAPL during 2021 and 2022:

Monitoring Well	April 26 – 27, 2021	January 4 – 5, 2022
MW-02-09	✓	
MW-02-12	✓	✓
MW-02-13	✓	✓
MW-02-14	✓	
MW-02-15	✓	✓
MW-03	✓	✓
MW-03-02	✓	✓
MW-03-03	✓	
MW-06	✓	✓
	✓	

MW-10		✓
MW-14	✓	✓
MW-19	✓	
MW-21	✓	✓
MW-23	✓	✓
EB-03	✓	
EB-08	✓	✓

LNAPL was previously observed in monitoring wells MW-02-06, MW-02-11, MW-02-14, MW-02-16, MW-03-01, and MW-04, MW-9, MW-11 but was not observed during 2021 due to remediation more fully discussed in Section 4.0.

On April 26 and 27, 2021, LNAPL ranged in thickness from 0.01 feet in well MW-03-02 to 1.12 feet in well EB-08. On January 4 and 5, 2022, LNAPL ranged in thickness from 0.07 feet in wells MW-2-13 and MW-03 to 7.99 feet in well MW-14. Table 1 presents a summary of LNAPL measurements during semi- annual groundwater monitoring. Figure 4a and Figure 4b present LNAPL thickness maps for April 26 and 27, 2021 and January 4 and 5, 2022, respectively.

On November 1, 2021, LAI personnel performed a product bailout in monitoring well MW-21 using the procedure by Gruszczenski (1987) where LNAPL is bailed from a well until the majority of LNAPL has been removed at which time the rising LNAPL and groundwater levels are recorded simultaneously to determine the inflection point where the LNAPL thickness in the well equals the LNAPL thickness in the formation. On November 1, 2021, the apparent (measured) LNAPL thickness in well MW-21 was 5.59 feet. The actual formation thickness was calculated at 0.97 feet with the capillary fringe at 4.62 feet in height. Table 2 presents the LNAPL bailout test results from monitoring well MW-12.

3.2 Depth to Groundwater and Potentiometric Surface Elevation

Monitoring wells were gauged for depth to groundwater during the first (1st) and second (2nd) semi- annual groundwater monitoring events on April 26 through 28, 2021 and January 4 and 5, 2022, respectively. The measurements were collected at the top of the PVC well casing with an electronic oil and water interface probe that was decontaminated between wells with a solution of Alconox® detergent and water and rinsed with distilled water. Table 1 presents a summary of the depth to groundwater and LNAPL thickness measurements.

Groundwater potentiometric maps from April 26 and 27, 2021 and January 4 and 5, 2022, depict groundwater movement south of a groundwater mound moving towards the east and southeast, while groundwater to the north of the mound appears to be moving towards the north and northeast. The groundwater mounding is due in part to water perched on shallow discontinuous clay and silty-clay units beneath the central and east areas of the Facility.

Groundwater occurs in the Tansill Formation. The base of the water-bearing strata (Yates Formation) is interpreted as the red shale between about 3,525.08 feet above mean sea level (MSL) in monitoring well

MW-02-02, located near the north area of the Facility to 3,453.97 feet above MSL in well EB-07 located southeast of the Facility. Groundwater elevations in the more peripheral monitor wells were relatively stable with seasonal fluctuation of not more than a few feet between April 2021 and January 2022. On April 26 and 27, 2021, groundwater was observed between approximately 3,536.26 feet above MSL at well MW-07 and 3,53.40 feet above MSL at well MW-14. On January 4 and 5, 2022, groundwater was observed between approximately 3,537.06 feet above MSL at well MW-07 and 3,458.55 feet above MSL in well MW-14. Similar groundwater conditions were observed during previous groundwater monitoring events. The regional groundwater flow direction is to the southeast. Figure 5a and Figure 5b present groundwater potentiometric maps for April 26 and 27, 2021, and January 4 and 5, 2022, respectively.

3.3 Groundwater Chemistry

Groundwater samples were collected from eleven (11) monitoring wells (MW-02, MW-08, MW-12, MW-15, MW-17, MW-18, MW-20, MW-22, MW-24, EB-02, and P-02) during the first (1st) and second (2nd) semi-annual events. Monitoring well MW-03 had LNAPL in the well during both monitoring events. Wells EB-07 and P-05 were dry during both monitoring events. Well EB-06 was dry during the second (2nd) semi-annual events.

The samples were collected using the low stress or low flow method according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the well screen and the well is pumped at a low rate until environmental parameters stabilize. Groundwater samples were collected from the discharge of the dedicated disposable Tygon tubing. The tubing was discarded after each use and the pump was thoroughly cleaned with a solution of potable water and laboratory grade detergent (Alconox®) and rinsed with distilled water. The samples were analyzed by DHL Analytical, Inc. (DHL), a National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratory, located in Round Rock, Texas. Samples from both events were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA SW-846 Method 8260D. Samples from the first (1st) event were analyzed for cations (calcium, magnesium, sodium, and potassium), anions (alkalinity, sulfate, and chloride) by EPA Method E300, and TDS by EPA Method M2540C. The cation samples were filtered by the laboratory to exclude particles larger than 0.45 micron (µm) and acidified with hydrochloric acid within 24-hours of collection. The purged water was contained in a portable tank and discharged to the Facility's process water system for disposal in an offsite NMOCD permitted Class II injection well. Table 3 presents the BTEX analytical data summary. Table 4 presents the cation, anion, and TDS analytical data summary. Appendix C presents laboratory analytical reports.

3.3.1 BTEX Analysis

All benzene values represent dissolved-phase concentrations that are well below the solubility limit (1,770 mg/L).

April 2021 and January 2022 BTEX Results

The following samples were reported with benzene concentrations above the WQCC human health standard of 0.01 milligrams per liter (mg/L):

Well	Benzene (mg/L) April 2021	Benzene (mg/L) January 2022
MW-22	5.63	1.58
MW-24	2.37	2.33

The benzene concentration in groundwater samples decreased below the WQCC human health standard (0.01 mg/L) in all but two (2) monitoring wells (MW-22 and MW-24) under the current groundwater monitoring program. The benzene concentrations in well MW-22 decreased from 17.7 mg/L (April 13, 2016) to 1.58 mg/L (January 5, 2022). The benzene concentration in well MW-24 decreased from a high of 5.10 mg/L on September 27, 2012, to 2.33 mg/L (January 4, 2022). Figure 6a presents a dissolved benzene concentration in groundwater map for April 27 and 28, 2021. Figure 6b presents a dissolved benzene concentration in groundwater map for January 5 and 6, 2022.

The benzene concentrations in well MW-22 decreased in concentration by approximately 95 percent between March 16, 2011, and January 5, 2022, and may be attributed to SVE remediation. The benzene concentration in well MW-23 remained stable with no significant changes until April 27, 2021, and January 4, 2022, when LNAPL was gauged at 0.08 and 0.02 feet, respectively. The benzene concentration in well MW-24 decreased approximately 54 percent between September 27, 2012, and January 4, 2022.

Well MW-24 was installed about 385 feet southeast (down gradient) from well EB-08 on September 28, 2011. On March 13, 2012, benzene was reported in a sample from MW-24 at 4.16 mg/L. The benzene concentration in MW-24 has varied in concentration from 5.1 mg/L, (September 27, 2012), 4.51 mg/L (December 5, 2018), 2.28 mg/L (September 23, 2020), 2.37 mg/L (April 27, 2021), and 2.33 mg/L (January 4, 2022). LNAPL in well EB-08 is the suspected source for the benzene in well MW-24. The benzene concentration in well MW-24 appears stable while SVE remediation in well EB-08 has reduced the LNAPL from a maximum thickness of 4.11 feet on September 24, 2012) to 0.11 feet (January 5, 2023).

Toluene, ethyl benzene and xylenes were below the WQCC human health standards in all samples collected on April 27 and 28, 2021, and January 5 and 6, 2022.

3.3.2 General Chemistry Analysis

On April 27 – 28, 2021, groundwater samples were analyzed for cations (calcium, magnesium, potassium, and sodium), anions (alkalinity, chloride, and sulfate), total dissolved solids (TDS) during the first semi-annual groundwater monitoring event. The cation metals (calcium, magnesium, potassium, and sodium) concentrations were consistent with previous monitoring events. No WQCC domestic water quality standards are available for cation metals. Sulfate and TDS are minerals dissolved from gypsum in the Tansill formation that naturally exceed the WQCC domestic water quality standards of 600 mg/L and 1,000 mg/L, respectively. Chloride was variable in concentration and exceeded the WQCC domestic water quality standard of 250 mg/L in samples from three (3) wells (MW-08, MW-15, and MW-18) with concentrations ranging from 530 mg/L (MW-08) to 3,200 mg/L (MW-15). Sulfate, and TDS

concentrations are naturally elevated above the WQCC domestic water quality standards of 600 mg/L and 1,000 mg/L in all samples and have similar trends over time with neither increasing and/or decreasing concentrations. Dissolution of gypsum from a historic leak in the cooling tower basin is suspected to have contributed to elevated chloride, sulfate, and TDS near the north central area of the Facility and extending north in the vicinity of monitoring well MW-15. The cooling tower was dismantled in 2018 and is no longer in service. Mounded groundwater near the center of the Facility causes groundwater elevated sulfate, chloride, and TDS to migrate in the direction of groundwater flow. Figure 7 presents the chloride concentration in groundwater map for April 27 and 28, 2021. Figure 8 presents the sulfate concentration in groundwater map for April 27 and 28, 2021. Figure 9 presents the TDS concentration in groundwater map for April 27 and 28, 2021.

4.0 REMEDIATION

4.1 LNAPL and Groundwater Remediation

Beginning in August 2018, Aka implemented LNAPL and groundwater remediation using SVE and thermal destruction methods. A mobile SVE system manufactured by CCC was used on the west side of the Facility (Staging Area 1) at monitoring wells MW-02-09, MW-02-13, MW-02-14, MW-03-01, MW-09, MW-10, MW-11, and test well AS-1. Between August 2018 and March 2019, the run time and average VOC combustion with the CCC system was 3,817 hours with approximately 28.9 pounds per hour (lbs/hr) for a total VOC combustion of approximately 85,274 lbs or about 42.64 tons. Air sparging was initiated in well MW-03-01 following removal of LNAPL from the well.

In March 2019, the CCC unit was moved to Staging Area B located near the east side of the Facility where LNAPL was gauged in monitoring wells MW-02-12 (8.07 feet), MW-21 (9.57 feet) and MW-23 (7.39 feet). It is speculated that the occurrence of LNAPL in wells MW-21 and MW-23 may have resulted from reduction of mounding beneath the central part of the Facility during SVE remediation at Staging Area A that allowed LNAPL and groundwater to migrate east and southeast consistent with the groundwater flow direction.

Between March 15, 2019, and August 5, 2019, the CCC system combusted approximately 130,293 pounds (lbs) or about 65.15 tons of VOC vapors and recovered approximately 480 gallons or approximately 11.43 barrels (bbl) of liquid.

Between March 2019 and August 2019, the CCC system runtime decreased noticeably, and the system was replaced with a truck-mounted dual phase SVE system with Enhanced Fluid Recovery® (EFR) operated by EcoVac Services (EcoVac), Moore, Oklahoma. The EcoVac system vacuum blower draws higher liquid and vapor volumes from the well and utilizes two (2) auxiliary internal combustion engines to combust vapors while liquids are contained in an onboard tank. Liquids were discharged to a portable (frac) tank leased from Gandy Corporation and staged near the east side of the Facility. The recovered liquid is disposed in an OCD permitted offsite commercial Class II SWD well.

Between August 5, 2019, and February 6, 2021, the EcoVac system was operated on all wells reporting LNAPL during eleven (11) events of various lengths. The EcoVac system was used at Staging Area A (MW-02-09, MW-02-13, MW-02-14, MW-03-01, MW-09, MW-10, MW-11, and AS-1), Staging Area B (MW-02-12, MW-21 and MW-23) and seventeen (17) other wells including MW-02-10, MW-02-11, MW-02-15, MW-012-16, MW-03 ME-03-02, MW-03-03, MW-04, MW-06, MW-13, MW-14, MW-19 and MW-20. During this period, the EcoVac combusted approximately 7,615.1 pounds or about 3.81 tons of VOC vapors, recovered approximately 2,475.2 gallons of hydrocarbon liquid including 1,261.1 equivalent gallons of hydrocarbons in vapor, 1,214 gallons of liquid hydrocarbons, and 20,690 gallons of water. The water volume recovered with the EcoVac system decreased significantly from 3,648 gallons in October 2019 to 121 gallon in February 2021.

During April 2021, June 2021, and January 2022, EcoVac recovered hydrocarbon vapors equivalent to approximately 4,628lbs or about 2.31 tons of hydrocarbons, 325 gallons or approximately 7.7bbl of hydrocarbon liquid and about 2,335 gallons or about 55.6bbl of water.

Between August 2018 and January 2022, the combined total vapor recovery from the CCC and EcoVac systems was approximately 227,810.1lbs or about 113.9 tons of hydrocarbons vapors, 3,280.2 gallons or 78.1bbl of hydrocarbon liquid and 23,025 gallons or 548.21bbl of water. Table 5 presents the EcoVac vapor and liquid recovery summary. Appendix D presents the EcoVac reports.

4.2 LNAPL Reduction

LNAPL in Staging Area A, located on the west side of the Facility, LNAPL in MW-02-16 was reduced from 1.74 feet (October 25, 2017) to 0.27 feet (March 11, 2022). LNAPL was successfully removed and has not returned in wells MW-09, MW-11, MW-19, MW-02-14, MW-03-01, and AS-1. SVE technology achieved 99.8 percent reduction in LNAPL thickness in well MW-06 from 13.39 feet (September 15, 2008) to 0.02 feet (March 10, 2022). SVE technology successfully reduced LNAPL between about 96.14 and 99.92 percent in wells MW-02-09 and MW-10 from a maximum thickness of 11.42 feet in MW-02- 09 (September 14, 2009) and 25.42 feet in MW-10 (July 31, 2008) to 0.38 feet (MW-02-09) and 0.20 feet (MW-10) on March 11, 2022. Table 6 presents the LNAPL gauging summary. Figure 10 presents a LNAPL reduction chart for monitoring wells on the west side (Staging Area A). Appendix E presents scatter plots for LNAPL reduction.

LNAPL in Staging Area B, located near the east side of the Facility, was remediated 100 percent in wells MW-02-06, MW-02-10, MW-02-11, MW-03-04, MW-04, MW-13, and MW-20. On January 4, 2022, LAI personnel recorded LNAPL in MW-02-12 and MW-21 at 7.02 and 5.18 feet, respectively. EcoVac performed SVE remediation between January 4 and 7, 2022. SVE was also performed at monitoring wells MW-02-15 and MW-014. Approximately 2,662 pounds of hydrocarbon vapors, equivalent to about 439.2 gallons or about 10.46 barrels of hydrocarbon liquid along with approximately 260 gallons of water was extracted from wells MW-02-12 and MW-21 between January 4 and 7, 2022. LNAPL was gauged at 0.56 and 0.58 feet thick in well MW-21 on January 27, 2022, and March 10, 2022, respectively. Figure 11 presents a LNAPL reduction chart for monitoring wells on the east side (Staging Area B).

The liquids (hydrocarbons and water) were recovered from Staging Area A and the area to the south and southeast in the vicinity of wells MW-02-13, MW-03-02 and MW-06. Appendix E presents a diagram titled, "Extraction Over Time, Liquid Gallons" that shows the area for liquid recovery over time.

Hydrocarbon vapor concentrations in soil greater than 100,000 parts per million (ppm) were recorded from wells MW-02-10, MW-02-11, MW-03, MW-04 located east of the former main compressor (Clark) building and from well MW-10 located in Staging Area A near the west side of the Facility. During the last quarter of 2018, the Clark Building was demolished along with the compressor engines, piping, and concrete. During February and March 2020, SDR Enterprises, LLC (SDR), under supervision from LAI, excavated approximately 3,500 cubic yards of soil from beneath the Clark Building foundation between about 2 and 15 feet bgs resulting in removal of a significant mass of hydrocarbons. The soil remediation was compiled into a report dated November 6, 2020 ("Empire Abo Plant (AP-112) Soil Remediation Report, Eddy County, New Mexico") was submitted to NMOCD on December 7, 2020, and approved on December 30, 2020.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The following observations are documented in this report:

- Groundwater is mounded beneath the Facility in two (2) areas near the north central and east areas of the Facility, which causes groundwater to flow in a radial pattern.
- The mounding is caused by shallow groundwater perched on units of laterally discontinuous clay and silty clay.
- The regional groundwater flow direction remains to the southeast.
- Monitoring well EB-06 has typically been used as the up-gradient monitoring well for the Facility became unobstructed and was dry during the second (2nd) semi-annual event.
- LNAPL was observed in sixteen (16) monitoring wells during the first (1st) semi-annual monitoring event on April 26 and 27, 2020, and in eleven (11) monitoring wells during the second (2nd) semi-annual monitoring event on January 4 – 5, 2022.
- Benzene decreased below the WQCC human health standard (0.01 mg/L) in all but two (2) monitoring wells (MW-22, and MW-24) under the current groundwater monitoring program during 2021.
- Benzene in well MW-22 decreased from 5.63 mg/L (April 27, 2011) to 1.58 mg/L (January 4, 2022).
- Benzene in well MW-24 with concentrations of 2.37 mg/L (April 28, 2021) and 2.33 mg/L (January 5, 2022) and appears stable following SVE remediation at well EB-08.
- Ethylbenzene, toluene, and xylenes were below the WQCC human health standards in groundwater samples during 2021.

- Chloride exceeded the WQCC domestic water quality standard (250 mg/L) in samples from three (3) monitoring wells (MW-08, MW-15, and MW-18) with concentrations ranging from 530 mg/L (MW-08) to 3,200 mg/L (MW-15) which is consistent with the previous monitoring periods.
- Sulfate and TDS exceeded the WQCC domestic water quality standards of 600 mg/L and 1,000 mg/L, respectively, in all samples during the first semi-annual monitoring event (April 27 – 28, 2021).
- The highest sulfate (47,200 mg/L) and TDS (106.000 mg/L) concentrations were reported in the groundwater sample from monitoring well MW-15, located north of the Facility, resulting from dissolution of minerals in the Tansill formation from a leak in the cooling tower basin.
- Between August 2018 and January 2022, SVE remediation recovered approximately 227,810.1lbs or about 113.9 tons of hydrocarbons vapors, 3,280.2 gallons or 78.1bbl of hydrocarbon liquid and 23,025 gallons or 548.21bbl of water.
- LNAPL in Staging Area A, located on the west side of the Facility, LNAPL in MW-02-16 was reduced approximately 85 percent with SVE technology from 1.74 feet (October 25, 2017) to 0.27 feet (March 11, 2022). LNAPL was successfully removed and has not returned in wells MW-02-14, MW-03-01, MW-09, MW-11, MW-19, and AS-1. SVE technology achieved 99.85 percent reduction in LNAPL thickness in well MW-06 from 13.39 feet (September 15, 2008) to 0.02 feet (March 10, 2022). SVE technology successfully reduced LNAPL between about 96.14 and 99.92 percent in wells MW-02-09 and MW-10 from a maximum thickness of 11.42 feet in MW-02-09 (September 14, 2009) and 25.42 feet in MW-10 (July 31, 2008) to 0.38 feet (MW-02-09) and 0.20 feet (MW-10) on March 11, 2022.
- LNAPL in Staging Area B, located on the east side of the Facility, was reduced 100 percent in monitoring wells MW-02-06, MW-02-10, MW-02-11, MW-03-03, MW-03-04, MW-04, MW-13, MW-20, and EB-03.
- The most liquid (hydrocarbons and water) was recovered from the west side of the Facility (Staging Area A), south and southeast of the Facility in the vicinity of wells MW-02-13, MW-03- 02 and MW-06.

5.2 Recommendations

Aka offers the following recommendations which are supported by the results of soil remediation performed between February 18, 2020, and April 8, 2020, PCB remediation performed between May 5, 2020, and September 16, 2020, and groundwater and LNAPL remediation performed between August 2018 and February 2021:

- Aka requests approval to discontinue SVE remediation based on the reduction of LNAPL between 85 and 100 percent from pre-remediation thicknesses and technically infeasible to recover the remaining LNAPL.
- Aka requests approval to allow residual dissolved benzene in groundwater to naturally attenuate based on demonstrated concentration reductions and no groundwater receptors (i.e., domestic, industrial, livestock) wells within 2 miles as documents by NMOSE.
- Aka requests approval to discontinues groundwater monitoring at the Facility.
- Conditional closure and release from future liability since Aka no longer owns or operates the Facility.

Tables

Table 1
AP-112
Monitor Well Completion and Gauging Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
MW-1	--	--	--	--	--	--	--	--	Well Plugged			
MW-2	12/29/1991	37.88	4	3,545.3	19 - 34	2.89	3,548.19	05/20/2013	--	34.00	--	3,514.19
								10/15/2013	--	34.05	--	3,514.14
								05/14/2014	--	34.00	--	3,514.19
								10/14/2014	--	34.05	--	3,514.14
								04/21/2015	--	34.05	--	3,514.14
								12/08/2015	--	34.10	--	3,514.09
								04/11/2016	--	34.06	--	3,514.13
								12/12/2016	--	34.06	--	3,514.13
								04/17/2017	--	34.06	--	3,514.13
								10/25/2017	--	34.03	--	3,514.16
								12/08/2017	--	34.13	--	3,514.06
								03/19/2018	--	34.13	--	3,514.06
								04/29/2019	--	34.08	--	3,514.11
								12/09/2019	--	34.08	--	3,514.11
								04/07/2020	DRY			
								09/22/2020	--	34.11	--	3,514.08
								04/27/2021	--	34.10	--	3,514.09
								01/04/2022	--	34.05	--	3,514.14
MW-02-01	--	--	--	--	--	--	--	--	Well Plugged			
MW-02-02	10/06/1992	48.65	4	3,549.3	35 - 45	2.96	3,552.26	05/20/2013	--	26.91	--	3,525.35
								10/15/2013	--	27.00	--	3,525.26
								05/14/2014	--	27.22	--	3,525.04
								10/14/2014	--	27.20	--	3,525.06
								04/21/2015	--	26.96	--	3,525.30
								12/08/2015	--	27.20	--	3,525.06
								04/11/2016	--	27.18	--	3,525.08
								12/12/2016	--	27.06	--	3,525.20
								04/17/2017	--	26.99	--	3,525.27
								10/25/2017	--	27.49	--	3,525.20
								12/08/2017	--	27.40	--	3,525.29
								03/19/2018	--	27.21	--	3,518.59
								12/09/2019	--	27.13	--	3,518.63
								04/07/2020	--	27.25	--	3,518.63
								09/22/2020	--	27.36	--	3,518.63
								04/27/2021	--	27.03	--	3,518.66
								01/04/2022	--	27.18	--	3,525.08
MW-02-03	09/28/1992	108.5	4	3,553.0	95 - 105	3.03	3,556.03	05/20/2013	--	77.55	--	3,478.48
								10/15/2013	--	79.00	--	3,477.03
								05/14/2014	--	81.11	--	3,474.92
								10/14/2014	--	79.12	--	3,476.91
								04/21/2015	--	79.65	--	3,476.38
								12/08/2015	--	79.95	--	3,476.08
								04/11/2016	--	80.03	--	3,476.00
								12/12/2016	--	89.50	--	3,466.53
								04/17/2017	--	82.44	--	3,473.59
								10/25/2017	--	83.15	--	3,472.88
								12/08/2017	--	83.46	--	3,472.57
								03/13/2018	--	84.51	--	3,471.52
								03/19/2018	--	84.23	--	3,471.80
								12/04/2018	--	85.02	--	3,471.01
								04/24/2019	--	86.02	--	3,470.01
								12/09/2019	--	83.42	--	3,472.61
								04/06/2020	--	84.12	--	3,471.91
								09/22/2020	--	85.56	--	3,470.47
								04/27/2021	--	86.47	--	3,469.56

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								01/04/2022	--	85.05	--	3,470.98
MW-02-04	09/30/1992	61.6	4	3,550.9	45 - 55	2.89	3,553.79	05/20/2013	--	51.45	--	
								10/15/2013	--	51.00	--	3,502.79
								05/14/2014	--	52.80	--	3,500.99
								10/14/2014	--	48.58	--	3,505.21
								04/21/2015	--	50.70	--	3,503.09
								12/08/2015	--	52.30	--	3,501.49
								04/11/2016	--	52.58	--	3,501.21
								12/12/2016	--	53.00	--	3,500.79
								04/17/2017	--	54.30	--	3,499.49
								10/25/2017	--	53.18	--	3,500.61
								12/08/2017	--	53.80	--	3,499.99
								03/13/2018	--	54.82	--	3,498.97
								03/19/2018	--	54.90	--	3,498.89
								12/04/2018	--	53.36	--	3,500.43
								04/24/2019	--	54.52	--	3,499.27
								12/09/2019	--	53.20	--	3,500.59
								04/06/2020	--	52.93	--	3,500.86
								09/22/2020	--	54.41	--	3,499.38
								04/27/2021	--	54.96	--	3,498.83
								01/04/2022	--	54.07	--	3,99.72
MW-02-05	10/06/1992	52.31	4	3,549.9	40 - 50	2.79	3,552.69	05/20/2013	--	27.45	--	3,525.24
								10/15/2013	--	27.60	--	3,525.09
								05/14/2014	--	27.90	--	3,524.79
								10/14/2014	--	27.90	--	3,524.79
								04/21/2015	--	27.62	--	3,525.07
								12/08/2015	--	27.80	--	3,524.89
								04/11/2016	--	27.82	--	3,524.87
								12/12/2016	--	28.71	--	3,523.98
								04/17/2017	--	27.00	--	3,525.69
								10/25/2017	--	28.11	--	3,524.58
								12/08/2017	--	28.09	--	3,524.60
								03/19/2018	--	27.80	--	3,524.89
								12/05/2018	--	28.03	--	3,524.66
								04/24/2019	--	27.84	--	3,524.85
								12/09/2019	--	27.80	--	3,524.89
								04/07/2020	--	27.92	--	3,524.77
								09/22/2020	--	28.03	--	3,524.66
								04/27/2021	--	27.63	--	3,525.06
								01/04/2022	--	27.84	--	3,524.85
MW-02-06	09/29/1992	23.90	4	3,548.3	11 - 21	2.52	3,550.82	05/20/2013	19.25	19.30	0.05	3,531.55
								10/15/2013	10.55	11.00	0.45	3,540.13
								05/14/2014	20.50	20.85	0.35	3,530.22
								10/14/2014	11.75	12.20	0.45	3,538.94
								04/21/2015	18.30	18.60	0.30	3,532.43
								12/08/2015	Sheen	16.11	Sheen	3,534.71
								04/11/2016	Sheen	15.79	Sheen	3,535.03
								12/12/2016	17.65	17.66	0.01	3,533.17
								04/17/2017	21.62	21.63	0.01	3,529.20
								10/25/2017	19.68	20.16	0.48	3,531.00
								12/08/2017	--	20.15	--	3,530.67
								03/13/2018	20.94	21.35	0.41	3,523.18
								03/19/2018	--	20.91	--	3,529.91
								12/04/2018	20.37	20.62	0.25	3,530.38
								04/24/2019	21.33	21.94	0.61	3,529.31

Note: Sheen is consistent and reproducible with multiple probes

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								08/30/2019	21.10	22.18	1.08	3,529.07
								12/09/2019	--	19.97	--	3,530.85
								04/06/2020	--	21.43	--	3,529.39
								09/22/2020	--	22.05	--	3,528.77
								04/27/2021	--	22.49	--	3,528.33
								01/04/2022	--	22.66	--	3,528.16
MW-02-07	10/05/1992	63.8	4	3,544.2	53 - 63	2.80	3,547.00	05/20/2013	--	58.00	--	3,489.00
								10/15/2013	--	60.40	--	3,486.60
								05/14/2014	--	61.70	--	3,485.30
								10/14/2014	--	59.05	--	3,487.95
								04/21/2015	--	62.00	--	3,485.00
								12/08/2015	DRY			
								04/11/2016	DRY			
								12/12/2016	--	61.95	--	3,485.05
								04/17/2017	DRY			
								10/25/2017	DRY			
								12/08/2017	DRY			
								03/19/2018	DRY			
								12/04/2018	DRY			
								04/24/2019	DRY			
								12/07/2019	Well Plugged			
MW-02-09	10/07/1992	43.97	4	3,543.5	30 - 40	3.02	3,546.52	05/20/2013	34.00	38.45	4.45	3,511.19
								10/15/2013	34.55	37.70	3.15	3,511.03
								05/14/2014	34.60	39.15	4.55	3,510.56
								10/14/2014	34.82	38.90	4.08	3,510.48
								04/21/2015	34.92	38.80	3.88	3,510.44
								12/08/2015	35.70	37.90	2.20	3,510.16
								04/11/2016	35.35	36.81	1.46	3,510.73
								12/13/2016	35.70	38.65	2.95	3,509.94
								04/17/2017	35.80	38.60	2.80	3,509.88
								10/25/2017	35.81	38.79	2.98	3,509.82
								12/08/2017	36.30	36.59	0.29	3,510.13
								03/13/2018	36.32	39.09	2.77	3,509.37
								03/19/2018	36.29	37.15	0.86	3,509.97
								12/04/2018	37.61	37.91	0.30	3,508.82
								04/24/2019	36.30	36.53	0.23	3,510.15
								08/30/2019	36.33	36.58	0.25	3,510.10
								12/09/2019	36.35	36.60	0.25	3,509.92
								04/06/2020	36.34	36.45	0.11	3,510.07
								09/22/2020	36.35	36.60	0.25	3,510.10
								01/04/2022	--	36.28	--	3,510.24
MW-02-10	09/29/1992	72.90	4	3,545.4	65 - 75	3.00	3,548.40	05/20/2013	63.96	**	>10	--
								10/15/2013	66.10	72.40	6.30	3,480.41*
								05/14/2014	68.35	>72.9	>4.55	<3,475.50
								10/14/2014	64.72	>72.9	>8.15	<3,475.50
								04/21/2015	67.25	>72.9	>5.65	<3,475.50
								12/08/2015	67.05	>72.9	>5.85	<3,475.50
								04/11/2016	67.47	>72.9	>5.43	<3,475.50
								12/12/2016	68.90	>72.9	>4.00	<3,472.70
								04/17/2017	69.98	>72.9	>2.92	<3,475.70
								10/25/2017	71.35	>72.9	>1.55	<3,475.70
								12/08/2017	70.95	>72.9	>1.95	<3,475.70
								03/13/2018	72.49	72.55	0.06	3,475.85
								03/19/2018	72.52	72.59	0.07	3,475.81
								12/04/2018	72.85	74.15	1.30	3,475.16

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								04/24/2019	DRY			
								12/09/2019	DRY			
								04/06/2020	72.31	72.77	0.46	3,475.63
								09/22/2020	74.29	74.31	0.02	3,474.10
								01/04/2022	--	74.57	--	3,473.83
MW-02-11	09/29/1992	23.42	4	3,544.0	10 - 20	2.79	3,546.79	05/20/2013	21.78	21.90	0.12	3,524.97*
								10/15/2013	18.25	18.30	0.05	3,528.52*
								05/14/2014	22.45	22.50	0.05	3,523.64*
								10/14/2014	17.29	17.35	0.06	3,528.80*
								04/21/2015	--	19.54	--	3,527.25
								12/08/2015	--	18.80	--	3,527.99
								04/11/2016	--	20.59	--	3,526.20
								12/12/2016	--	21.00	--	3,525.79
								04/17/2017	--	21.45	--	3,525.34
								10/25/2017	--	21.38	--	3,525.41
								12/08/2017	--	22.10	--	3,524.69
								03/13/2018	22.93	23.23	0.30	3,523.56
								03/19/2018	22.90	**	**	3,546.79
								12/04/2018	21.77	22.40	0.63	3,524.83
								04/24/2019	23.17	--	--	--
								12/09/2019	21.96	**	--	
								04/06/2020	DRY			
								09/22/2020	DRY			
								04/27/2021	DRY			
								01/04/2022	DRY			
MW-02-12	10/01/1992	85.85	4	3,540.3	70 - 80	3.02	3,543.32	05/20/2013	--	66.84	--	3,476.48
								10/15/2013	--	67.80	--	3,475.52
								05/14/2014	--	70.00	--	3,473.32
								10/14/2014	--	67.25	--	3,476.07
								04/21/2015	--	68.10	--	3,475.22
								12/08/2015	--	68.25	--	3,475.07
								04/11/2016	--	68.42	--	3,474.90
								12/12/2016	--	69.10	--	3,474.22
								04/17/2017	--	70.66	--	3,472.66
								10/25/2017	--	71.35	--	3,471.97
								12/08/2017	--	71.68	--	3,471.64
								03/13/2018	--	72.45	--	3,470.87
								03/19/2018	--	72.54	--	3,470.78
								12/04/2018	72.94	81.01	8.07	3,467.96
								04/24/2019	74.36	74.43	0.07	3,468.94
								12/09/2019	71.35	71.38	0.03	3,471.94
								04/07/2020	72.00	72.07	0.07	3,471.25
								09/22/2020	73.59	73.81	0.22	3,469.66
								04/27/2021	74.58	74.64	0.06	3,468.72
								01/04/2022	72.93	79.25	6.32	3,468.49
MW-02-13	10/07/1992	50.05	4	3,542.7	36 - 46	2.89	3,545.59	05/20/2013	43.80	47.42	3.62	3,500.70
								10/15/2013	43.82	47.40	3.58	3,500.70
								05/14/2014	45.91	47.38	1.47	3,499.24
								10/14/2014	41.40	47.25	5.85	3,502.44
								04/21/2015	45.00	46.80	1.80	3,500.05
								12/08/2015	44.75	46.90	2.15	3,500.20
								04/11/2016	44.72	47.07	2.35	3,500.17
								12/13/2016	45.30	47.02	1.72	3,499.77
								04/17/2017	45.20	47.05	1.85	3,499.84
								10/25/2017	46.37	47.13	0.76	3,498.99

Table 1
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Empire Abo Gas Plant, Eddy County, New Mexico

Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								12/08/2017	47.00	47.07	0.07	3,498.57
								03/13/2018	46.91	48.11	1.20	3,498.32
								03/19/2018	46.83	47.35	0.52	3,498.60
								12/04/2018	46.68	46.87	0.19	3,498.85
								04/24/2019	47.28	47.84	0.56	3,498.14
								08/30/2019	47.64	47.85	0.21	3,498.13
								12/09/2019	47.67	47.68	0.01	3,497.91
								04/07/2020	47.50	47.58	0.08	3,498.01
								09/22/2020	47.45	47.53	0.08	3,498.12
								04/27/2021	47.69	47.70	0.01	3,497.90
								01/04/2022	47.45	47.52	0.07	3,498.12
MW-02-14	10/05/1992	78.8	4	3,541.3	63 - 73	3.23	3,544.53	05/20/2013	59.47	60.35	0.88	3,484.80
								10/15/2013	60.15	60.85	0.70	3,484.17
								05/14/2014	61.60	62.20	0.60	3,482.75
								10/14/2014	59.30	61.20	1.90	3,484.66
								04/21/2015	61.25	62.00	0.75	3,483.06
								12/08/2015	61.35	61.70	0.35	3,483.08
								04/11/2016	61.38	61.80	0.42	3,483.02
								12/13/2016	61.31	61.90	0.59	3,483.04
								04/17/2017	61.30	61.80	0.50	3,483.08
								10/25/2017	64.47	64.95	0.48	3,479.92
								12/08/2017	64.79	64.82	0.03	3,479.73
								03/13/2018	65.55	65.69	0.14	3,478.94
								03/19/2018	65.82	65.90	0.08	3,478.69
								12/04/2018	66.67	66.92	0.25	3,477.79
								04/24/2019	--	67.94	--	3,476.59
								08/30/2019	67.45	68.00	0.55	3,476.92
								12/09/2019	64.57	64.58	0.01	3,479.96
								04/07/2020	65.30	65.34	0.04	3,479.22
								09/22/2020	65.19	65.23	0.04	3,479.33
								04/27/2021	68.48	68.53	0.05	3,476.04
								01/04/2022	--	67.53	--	3,477.00
MW-02-15	10/02/1992	75.95	4	3,540.2	60 - 70	3.09	3,543.29	05/20/2013	--	61.04	--	3,482.25
								10/15/2013	--	61.50	--	3,481.79
								05/14/2014	--	62.75	--	3,480.54
								10/14/2014	--	60.71	--	3,482.58
								04/21/2015	--	62.25	--	3,481.04
								12/08/2015	--	62.21	--	3,481.08
								04/11/2016	--	62.31	--	3,480.98
								12/13/2016	67.31	67.41	0.10	3,475.95
								04/17/2017	64.32	64.60	0.28	3,478.89
								10/25/2017	64.88	65.08	0.20	3,478.35
								12/08/2017	64.69	65.00	0.31	3,478.51
								03/13/2018	65.69	68.76	3.07	3,476.68
								03/19/2018	65.71	68.31	2.60	3,476.80
								12/04/2018	66.03	70.24	4.21	3,476.00
								04/24/2019	68.00	68.37	0.37	3,475.18
								08/30/2019	69.13	69.51	0.38	3,474.04
								12/09/2019	64.59	65.51	0.92	3,477.78
								04/06/2020	65.66	65.89	0.23	3,477.40
								09/22/2020	67.30	67.50	0.20	3,475.93
								04/27/2021	69.85	70.18	0.33	3,473.34
								01/04/2022	68.57	69.66	1.09	3,474.39
MW-02-16	09/30/1992	86.10	4	3,541.0	70 - 80	3.24	3,544.24	05/20/2013	--	67.25	--	3,476.99
								10/15/2013	--	67.90	--	3,476.34

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Empire Abo Gas Plant, Eddy County, New Mexico

Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								05/14/2014	--	70.00	--	3,474.24
								10/14/2014	--	67.58	--	3,476.66
								04/21/2015	--	68.56	--	3,475.68
								12/08/2015	--	68.50	--	3,475.74
								04/11/2016	--	68.66	--	3,475.58
								12/12/2016	72.15	72.89	0.74	3,471.87
								04/17/2017	70.50	72.13	1.63	3,473.25
								10/25/2017	70.91	72.65	1.74	3,472.81
								12/08/2017	71.74	71.75	0.01	3,472.50
								03/13/2018	72.10	72.34	0.24	3,472.07
								03/19/2018	72.30	72.50	0.20	3,471.88
								12/04/2018	72.30	72.42	0.12	3,471.90
								04/24/2019	73.24	73.48	0.24	3,470.93
								08/30/2019	73.22	74.00	0.78	3,470.41
								12/09/2019	--	71.02	--	3,473.22
								04/07/2020	--	71.65	--	3,472.59
								09/22/2020	Sheen	72.89	Sheen	3,471.35
								04/27/2021	Sheen	74.09	Sheen	3,470.15
								01/04/2022	Sheen	73.12	Sheen	3,471.12
MW-02-18	10/07/1992	39.80	4	3,542.7	26 - 36	3.00	3,545.70	05/20/2013	--	20.65	--	3,525.05
								10/15/2013	--	17.15	--	3,528.55
								05/14/2014	--	21.25	--	3,524.45
								10/14/2014	--	15.35	--	3,530.35
								04/21/2015	--	18.35	--	3,527.35
								12/08/2015	--	17.75	--	3,527.95
								04/11/2016	--	19.63	--	3,526.07
								12/12/2016	--	19.95	--	3,525.75
								04/17/2017	--	20.32	--	3,525.38
								10/25/2017	--	20.49	--	3,525.21
								12/08/2017	--	21.24	--	3,524.46
								03/13/2018	--	21.90	--	3,523.80
								03/19/2018	--	21.95	--	3,523.75
								12/04/2018	--	20.82	--	3,524.88
								04/24/2019	--	22.34	--	3,523.36
								12/10/2019	--	21.50	--	3,524.20
								04/06/2020	--	22.48	--	3,523.22
								09/22/2020	--	23.08	--	3,522.62
								04/27/2021	--	23.80	--	3,521.90
								01/04/2022	--	23.12	--	3,522.58
MW-03	12/20/1991	63.30	4	3,552.4	69 - 89	2.90	3,555.30	05/20/2013	--	72.62	--	3,482.68
								10/15/2013	--	75.90	--	3,479.40
								05/14/2014	77.30	77.32	0.02	3,477.99
								10/14/2014	--	75.12	--	3,480.18
								04/21/2015	--	76.35	--	3,478.95
								12/08/2015	--	76.28	--	3,479.02
								04/11/2016	--	76.60	--	3,478.70
								12/12/2016	--	77.40	--	3,477.90
								04/17/2017	--	79.63	--	3,475.67
								10/25/2017	--	79.45	--	3,475.85
								12/08/2017	--	80.54	--	3,474.76
								03/13/2018	82.65	83.06	0.41	3,472.53
								03/19/2018	--	82.90	--	3,555.30
								12/04/2018	--	82.75	--	3,472.55
								04/25/2019	84.11	84.13	0.02	3,471.18
								12/09/2019	--	79.14	--	3,476.16
								04/06/2020	--	81.52	--	3,473.78

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Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								09/22/2020	83.60	83.64	0.04	3,471.67
								04/28/2021	84.87	85.03	0.16	3,470.38
								01/04/2022	83.82	83.89	0.07	3,471.46
MW-03-01	05/03/1994	73.4	4	3,539.9	50 - 70	2.66	3,542.56	05/20/2013	--	57.50	--	3,485.06
								10/15/2013	58.10	58.70	0.60	3,484.28
								05/14/2014	59.20	60.70	1.50	3,482.91
								10/14/2014	57.07	57.15	0.08	3,485.47
								04/21/2015	59.65	60.20	0.55	3,482.75
								12/08/2015	59.66	61.00	1.34	3,482.50
								04/11/2016	58.53	58.75	0.22	3,483.96
								12/13/2016	58.26	58.36	0.10	3,484.27
								04/17/2017	58.20	58.30	0.10	3,484.33
								10/25/2017	61.51	61.76	0.25	3,480.98
								12/08/2017	61.70	61.77	0.07	3,480.84
								03/13/2018	62.87	64.40	1.53	3,479.23
								03/19/2018	62.90	63.17	0.27	3,479.58
								12/04/2018	--	64.12	--	3,479.39
								04/24/2019	--	65.15	--	3,478.44
								12/09/2019	--	61.38	--	3,481.18
								04/06/2020	65.30	65.34	0.04	3,477.22
								09/22/2020	--	64.49	--	3,478.07
								04/27/2021	--	66.19	--	3,476.37
								01/04/2022	--	65.10	--	3,477.46
MW-03-02	05/04/1994	105.75	4	3,538.6	60 - 100	2.48	3,541.08	05/20/2013	68.75	69.10	0.35	3,472.23
								10/15/2013	65.80	69.00	3.20	3,474.32
								05/14/2014	69.80	70.40	0.60	3,471.10
								10/14/2014	67.40	68.20	0.80	3,473.44
								04/21/2015	68.75	68.95	0.20	3,472.27
								12/08/2015	68.75	69.20	0.45	3,472.20
								04/11/2016	68.97	69.32	0.35	3,472.01
								12/12/2016	68.65	69.33	0.68	3,472.23
								04/17/2017	70.16	71.14	0.98	3,470.63
								10/25/2017	70.65	70.89	0.24	3,470.36
								12/08/2017	--	71.03	--	3,470.05
								03/13/2018	--	71.40	--	3,469.68
								03/19/2018	--	71.32	--	3,469.76
								12/04/2018	--	71.00	--	3,470.08
								04/24/2019	--	73.31	--	3,467.77
								12/09/2019	--	71.33	--	3,469.75
								04/06/2020	--	71.04	--	3,470.04
								09/22/2020	--	72.29	--	3,468.79
								04/28/2021	73.99	74.00	0.01	3,467.09
								01/04/2022	72.87	73.50	0.63	3,468.02
MW-03-03	05/04/1994	85.4	4	3,542.3	55 - 80	2.42	3,544.72	05/20/2013	--	71.30	--	3,473.42
								10/15/2013	--	71.65	--	3,473.07
								05/14/2014	--	72.90	--	3,471.82
								10/14/2014	--	71.30	--	3,473.42
								04/21/2015	--	71.40	--	3,473.32
								12/08/2015	--	71.70	--	3,473.02
								04/11/2016	--	71.81	--	3,472.91
								12/12/2016	--	72.20	--	3,472.52
								04/17/2017	--	73.29	--	3,471.43
								10/25/2017	--	74.84	--	3,469.88
								12/08/2017	--	73.90	--	3,470.82
								03/13/2018	--	74.39	--	3,470.33

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Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								03/19/2018	--	74.47	--	3,470.25
								12/04/2018	74.63	75.03	0.40	3,469.97
								04/24/2019	75.21	75.67	0.46	3,469.37
								12/09/2019	74.03	74.43	0.40	3,470.29
								04/06/2020	Sheen	74.10	Sheen	3,470.62
								09/22/2020	74.95	75.12	0.17	3,469.72
								04/27/2021	75.72	76.08	0.36	3,468.89
								01/04/2022	--	75.15	--	3,469.57
MW-03-04	05/04/1994	117.5	4	3,555.7	65 - 110	2.75	3,558.45	05/20/2013	78.12	78.42	0.30	3,480.24
								10/15/2013	81.55	81.95	0.40	3,476.78
								05/14/2014	83.35	84.25	0.90	3,474.83
								10/14/2014	81.80	82.25	0.45	3,476.52
								04/21/2015	82.35	82.55	0.20	3,476.04
								12/08/2015	82.70	82.95	0.25	3,475.68
								04/11/2016	83.43	83.08	0.35	3,475.62
								12/12/2016	83.55	84.20	0.65	3,474.71
								04/17/2017	84.90	86.92	2.02	3,472.94
								10/25/2017	85.89	87.57	1.68	3,472.06
								12/08/2017	--	85.96	--	3,472.49
								03/13/2018	--	86.79	--	3,471.66
								03/19/2018	--	86.59	--	3,471.86
								12/04/2018	--	87.69	--	3,470.76
								04/24/2019	--	88.15	--	3,470.30
								08/30/2019	88.23	88.45	0.22	3,470.00
								12/09/2019	--	70.90	--	3,487.55
								04/06/2020	Sheen	86.85	Sheen	3,471.60
								09/22/2020	--	87.97	--	3,470.48
								04/27/2021	--	88.62	--	3,469.83
								01/04/2022	--	88.38	--	3,470.07
MW-04	12/21/1991	62.59	4	3,547.8	45 - 60	3.19	3,550.99	05/20/2013	52.03	52.10	0.07	3,498.94
								10/15/2013	53.25	53.45	0.20	3,497.68
								05/14/2014	57.80	58.30	0.50	3,493.04
								10/14/2014	53.00	53.25	0.25	3,497.92
								04/21/2015	56.90	57.55	0.65	3,493.90
								12/08/2015	53.55	54.20	0.65	3,497.25
								04/11/2016	52.97	53.75	0.78	3,497.79
								12/12/2016	52.86	53.65	0.79	3,497.89
								04/17/2017	57.45	58.33	0.88	3,493.28
								10/25/2017	53.83	54.60	0.77	3,496.93
								12/08/2017	DRY			
								03/13/2018	DRY			
								03/19/2018	DRY			
								12/04/2018	--	52.95	--	3,498.04
								04/24/2019	58.00	59.85	1.85	3,491.14
								12/10/2019	54.77	55.03	0.26	3,495.96
								04/06/2020	DRY			
								09/22/2020	DRY			
								04/27/2021	DRY			
								01/04/2022	DRY			
MW-05	12/22/1991	95.3	4	3,540.6	71 - 96	3.17	3,543.77	05/20/2013	--	66.73	--	3,477.04
								10/15/2013	--	67.60	--	3,476.17
								05/14/2014	--	69.70	--	3,474.07
								10/14/2014	--	67.00	--	3,476.77
								04/21/2015	--	68.02	--	3,475.75
								12/08/2015	--	68.20	--	3,475.57

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Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								04/11/2016	--	68.22	--	3,475.55
								12/12/2016	--	68.92	--	3,474.85
								04/17/2017	--	70.49	--	3,473.28
								10/25/2017	--	70.92	--	3,472.85
								12/08/2017	--	76.68	--	3,467.09
								03/13/2018	--	72.90	--	3,470.87
								03/19/2018	--	72.24	--	3,471.53
								12/04/2018	--	72.29	--	3,471.48
								04/24/2019	--	73.42	--	3,470.35
								12/09/2019	--	71.02	--	3,472.75
								04/07/2020	--	71.86	--	3,471.91
								09/22/2020	--	73.15	--	3,470.62
								04/28/2021	--	74.44	--	3,469.33
								01/04/2022	--	73.37	--	3,470.40
MW-06	12/22/1991	76.9	4	3,541.8	30 - 50	2.70	3,544.50	05/20/2013	42.48	46.30	3.82	3,500.87
								10/15/2013	41.68	46.80	5.12	3,501.28
								05/14/2014	44.70	47.00	2.30	3,499.11
								10/14/2014	39.60	43.70	4.10	3,503.67
								04/21/2015	42.80	44.90	2.10	3,501.07
								12/08/2015	43.05	46.45	3.40	3,500.43
								04/11/2016	43.59	46.52	2.93	3,500.03
								12/13/2016	43.78	46.31	2.53	3,499.96
								04/17/2017	43.85	46.30	2.45	3,499.92
								10/25/2017	44.76	46.00	1.24	3,499.37
								12/08/2017	45.90	45.91	0.01	3,498.60
								03/13/2018	46.12	47.45	1.33	3,497.98
								03/19/2018	46.06	47.45	1.39	3,498.02
								12/04/2018	44.86	46.15	1.29	3,499.25
								04/24/2019	46.08	46.69	0.61	3,498.24
								08/30/2019	47.35	47.46	0.11	3,497.47
								12/09/2019	46.52	46.53	0.01	3,497.97
								04/07/2020	46.02	46.15	0.13	3,498.35
								09/22/2020	46.62	46.76	0.14	3,497.84
								04/28/2021	47.40	47.42	0.02	3,497.09
								01/04/2022	46.38	47.02	0.64	3,497.93
MW-07	12/22/1991	26.35	4	3,546.0	11 - 26	0.49	3,546.49	05/20/2013	--	4.30	--	3,542.19
								10/15/2013	--	8.05	--	3,538.44
								05/14/2014	--	8.10	--	3,538.39
								10/14/2014	--	7.30	--	3,539.19
								04/21/2015	--	7.90	--	3,538.59
								12/08/2015	--	6.00	--	3,540.49
								04/11/2016	--	5.61	--	3,540.88
								12/12/2016	--	8.88	--	3,537.61
								04/17/2017	--	7.98	--	3,538.51
								10/25/2017	--	8.63	--	3,537.86
								12/08/2017	--	8.95	--	3,537.54
								03/19/2018	--	9.68	--	3,536.81
								12/04/2018	--	8.72	--	3,537.77
								04/24/2019	--	8.88	--	3,537.61
								12/09/2019	--	8.88	--	3,537.61
								04/07/2020	--	8.80	--	3,537.69
								09/21/2020	--	9.52	--	3,536.97
								04/28/2021	--	10.23	--	3,536.26
								01/04/2022	--	9.43	--	3,537.06
MW-08	12/29/1991	88.95	4	3,540.5	69 - 89	3.23	3,543.73	05/20/2013	--	66.07	--	3,477.66

Table 1
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Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								10/15/2013	--	66.45	--	3,477.28
								05/14/2014	--	68.15	--	3,475.58
								10/14/2014	--	65.95	--	3,477.78
								04/21/2015	--	67.10	--	3,476.63
								12/08/2015	--	67.25	--	3,476.48
								04/11/2016	--	67.36	--	3,476.37
								12/12/2016	--	67.23	--	3,476.50
								04/17/2017	--	67.20	--	3,476.53
								10/25/2017	--	70.02	--	3,473.71
								12/08/2017	--	70.43	--	3,473.30
								03/13/2018	--	71.22	--	3,472.51
								03/19/2018	--	71.11	--	3,472.62
								12/04/2018	--	72.03	--	3,471.70
								04/24/2019	--	73.09	--	3,470.64
								12/09/2019	--	70.91	--	3,472.82
								04/06/2020	--	71.02	--	3,472.71
								09/22/2020	--	72.59	--	3,471.14
								04/28/2021	--	74.10	--	3,469.63
								01/04/2022	--	73.33	--	3,470.40
MW-09	12/29/1991	75.8	4	3,540.4	52 - 72	2.42	3,542.82	05/20/2013	--	56.50	--	3,486.32
								10/15/2013	57.25	57.55	0.30	3,485.48
								05/14/2014	58.50	59.32	0.82	3,484.07
								10/14/2014	55.90	57.95	2.05	3,486.31
								04/21/2015	58.70	60.80	2.10	3,483.49
								12/08/2015	58.85	59.60	0.75	3,483.75
								04/11/2016	58.47	59.66	1.19	3,483.99
								12/13/2016	58.28	59.74	1.46	3,484.10
								04/17/2017	58.28	59.70	1.42	3,484.11
								10/25/2017	61.65	63.44	1.79	3,480.63
								12/08/2017	61.81	63.35	1.54	3,480.55
								03/13/2018	62.96	64.56	1.60	3,479.38
								03/19/2018	63.01	64.69	1.68	3,479.31
								12/04/2018	64.14	64.18	0.04	3,478.67
								04/24/2019	--	65.70	--	3,477.12
								12/09/2019	--	61.88	--	3,480.94
								04/06/2020	--	62.50	--	3,480.32
								09/22/2020	--	64.79	--	3,478.03
								04/27/2021	--	66.58	--	3,476.24
								01/04/2022	--	65.45	--	3,474.37
MW-10	07/28/2008	53.24	4	3,541.8	15 - 50	2.64	3,544.44	05/20/2013	45.55	51.60	6.05	3,497.08
								10/15/2013	47.55	52.00	4.45	3,495.56
								05/14/2014	50.70	52.30	1.60	3,493.26
								10/14/2014	47.40	51.10	3.70	3,495.93
								04/21/2015	48.05	50.95	2.90	3,495.52
								12/08/2015	48.70	53.00	4.30	3,494.45
								04/11/2016	44.81	52.62	7.81	3,497.29
								12/13/2016	50.40	52.61	2.21	3,493.38
								04/17/2017	50.51	52.60	2.09	3,493.30
								10/25/2017	50.76	52.69	1.93	3,493.10
								12/08/2017	--	52.83	--	3,491.61
								03/13/2018	52.63	53.31	--	3,491.13
								03/19/2018	52.64	52.88	0.24	3,491.73
								12/04/2018	52.64	52.66	0.02	3,491.79
								04/24/2019	52.91	--	--	--
								12/09/2019	52.73	**	--	--
								04/06/2020	H2S Present in Well			

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Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								09/22/2020	52.26	52.44	0.18	3,492.13
								04/27/2021	--	52.71	--	3,491.73
								01/04/2022	52.45	52.64	0.19	3,491.93
MW-11	07/29/2008	58.98	4	3,540.2	21 - 56	2.53	3,542.73	05/20/2013	--	56.10	--	3,486.63
								10/15/2013	--	57.00	--	3,485.73
								05/14/2014	58.30	58.98	0.68	3,484.22
								10/14/2014	56.00	56.20	0.20	3,486.67
								04/21/2015	58.60	58.98	0.38	3,484.01
								12/08/2015	58.40	58.98	0.58	3,484.15
								04/11/2016	58.38	58.41	0.03	3,484.34
								12/13/2016	Sheen	58.33	Sheen	3,484.40
								04/17/2017	58.40	58.55	0.15	3,484.29
								10/25/2017	--	58.47	--	3,484.26
								12/08/2017	--	58.51	--	3,484.22
								03/13/2018	--	58.74	--	3,483.99
								03/19/2018	--	58.55	--	3,484.18
								12/04/2018	--	58.60	--	3,484.13
								04/24/2019	--	58.86	--	3,483.87
								12/09/2019	--	58.93	--	3,483.80
								04/06/2020	DRY			
								09/22/2020	DRY			
								04/28/2021	DRY			
								01/04/2022	DRY			
MW-12	07/29/2008	74.11	4	3,522.6	36 - 71	2.65	3,525.25	05/20/2013	--	62.00	--	3,463.25
								10/15/2013	--	61.20	--	3,464.05
								05/14/2014	--	62.78	--	3,462.47
								10/14/2014	--	60.95	--	3,464.30
								04/21/2015	--	59.80	--	3,465.45
								12/08/2015	--	60.45	--	3,464.80
								04/11/2016	--	59.99	--	3,465.26
								12/12/2016	--	60.40	--	3,464.85
								04/17/2017	--	61.00	--	3,464.25
								10/25/2017	--	62.31	--	3,462.94
								12/08/2017	--	62.79	--	3,462.46
								03/13/2018	--	63.50	--	3,461.75
								03/19/2018	--	63.27	--	3,461.98
								12/04/2018	--	64.20	--	3,461.05
								04/24/2019	--	64.61	--	3,460.64
								04/07/2020	--	64.20	--	3,461.05
								09/22/2020	--	64.80	--	3,460.45
								04/28/2021	--	65.61	--	3,459.64
								01/04/2022	--	65.16	--	3,460.09
MW-13	07/29/2008	88.64	4	3,558.5	50 - 85	2.90	3,561.40	05/20/2013	--	71.88	--	3,489.52
								10/14/2013	--	83.00	--	3,478.40
								05/14/2014	81.10	>88.64	> 7.54	<3,472.76*
								10/13/2014	--	84.65	--	3,476.75
								04/20/2015	--	86.03	--	3,475.37
								12/07/2015	83.00	>88.64	> 5.64	<3,472.76*
								04/11/2016	*	86.03		
								12/12/2016	--	86.80	--	3,474.60
								04/17/2017	DRY			
								10/24/2017	DRY			
								12/08/2017	DRY			
								03/19/2018	DRY			
								12/03/2018	DRY			

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								04/23/2019	DRY			
								12/10/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/26/2021	DRY			
								01/04/2022	DRY			
MW-14	07/30/2008	72.50	4	3,517.7	33 - 68	2.62	3,520.32	05/20/2013	61.52	61.54	0.02	3,458.79*
								10/14/2013	--	60.61	--	3,459.71
								05/14/2014	62.23	62.28	0.05	3,458.08*
								10/13/2014	57.80	60.80	3.00	3,461.62*
								04/20/2015	--	59.55	--	3,460.77
								12/07/2015	Sheen	59.50	Sheen	3,460.82
								04/11/2016	--	60.08	--	3,460.24
								12/12/2016	--	59.38	--	3,460.94
								04/17/2017	59.52	59.68	0.16	3,460.75
								10/24/2017	61.42	61.53	0.11	3,458.87
								12/08/2017	62.00	62.12	0.12	3,458.28
								03/13/2018	63.80	64.02	0.22	3,456.45
								03/19/2018	--	64.30	--	3,456.02
								12/03/2018	63.15	65.37	2.22	3,456.50
								04/24/2019	66.29	67.64	1.35	3,453.63
								08/30/2019	66.28	66.54	0.26	3,457.71
								12/10/2019	63.24	63.51	0.27	3,456.81
								04/06/2020	64.13	64.87	0.74	3,455.45
								09/21/2020	65.55	65.70	0.15	3,454.73
								04/27/2021	66.90	66.96	0.06	3,453.40
								01/05/2022	59.39	67.33	7.94	3,458.55
MW-15	07/30/2008	80.20	4	3,559.7	42 - 77	2.75	3,562.45	05/20/2013	--	67.30	--	3,495.15
								10/14/2013	--	66.52	--	3,495.93
								05/14/2014	--	67.75	--	3,494.70
								10/13/2014	--	65.65	--	3,496.80
								04/20/2015	--	67.30	--	3,495.15
								12/07/2015	--	64.70	--	3,497.75
								04/11/2016	--	67.26	--	3,495.19
								12/12/2016	--	67.16	--	3,495.29
								04/17/2017	--	67.58	--	3,494.87
								10/24/2017	--	67.24	--	3,495.21
								12/08/2017	--	67.34	--	3,495.11
								03/19/2018	--	67.55	--	3,494.90
								12/03/2018	--	67.73	--	3,494.72
								04/23/2019	--	66.18	--	3,496.27
								12/09/2019	--	65.03	--	3,497.42
								04/06/2020	--	67.43	--	3,495.02
								09/21/2020	--	65.64	--	3,496.81
								04/26/2021	--	67.61	--	3,494.84
								01/04/2022	--	67.80	--	3,494.65
MW-16	06/24/2009	117.39	4	3,582.6	80 - 115	2.86	3,585.46	05/20/2013	--	111.70	--	3,473.76
								10/14/2013	--	112.30	--	3,473.16
								05/14/2014	--	114.10	--	3,471.36
								10/13/2014	--	113.85	--	3,471.61
								04/20/2015	--	112.45	--	3,473.01
								12/07/2015	--	114.25	--	3,471.21
								04/11/2016	--	114.72	--	3,470.74
								12/12/2016	--	115.30	--	3,470.16
								04/17/2017	--	115.72	--	3,469.74

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								10/24/2017	--	116.79	--	3,468.67
								12/08/2017	--	116.85	--	3,468.61
								03/19/2018	--	116.83	--	3,468.63
								12/04/2018	--	116.90	--	3,468.56
								04/24/2019	--	116.86	--	3,468.60
								12/09/2019	--	116.86	--	3,468.60
								04/06/2020	--	116.89	--	3,468.57
								09/21/2020	--	116.85	--	3,468.61
								04/26/2021	--	116.87	--	3,468.59
								01/04/2022	--	116.88	--	3,468.58
MW-17	06/23/2009	101.6	4	3,568.0	60 - 95	2.84	3,570.84	05/20/2013	--	93.36	--	3,477.48
								10/15/2013	--	93.00	--	3,477.84
								05/14/2014	--	95.61	--	3,475.23
								10/14/2014	--	95.15	--	3,475.69
								04/20/2015	--	95.80	--	3,475.04
								12/07/2015	--	96.45	--	3,474.39
								04/11/2016	--	95.34	--	3,475.50
								12/12/2016	--	96.60	--	3,474.24
								04/17/2017	--	97.72	--	3,473.12
								10/24/2017	--	97.75	--	3,473.09
								12/08/2017	--	95.92	--	3,474.92
								03/19/2018	--	98.21	--	3,472.63
								12/04/2018	--	97.05	--	3,473.79
								04/23/2019	--	98.58	--	3,472.26
								12/09/2019	--	98.23	--	3,472.61
								04/06/2020	--	98.10	--	3,472.74
								09/21/2020	--	98.28	--	3,472.56
								04/26/2021	--	98.16	--	3,472.68
								01/04/2022	--	98.28	--	3,472.56
MW-18	06/24/2009	56.53	4	3,529.7	33 - 53	2.93	3,532.63	05/20/2013	--	50.95	--	3,481.68
								10/14/2013	Sheen	50.50	Sheen	3,482.13
								05/14/2014	--	51.31	--	3,481.32
								10/13/2014	--	51.79	--	3,480.84
								04/20/2015	--	51.02	--	3,481.61
								12/07/2015	--	52.21	--	3,480.42
								04/11/2016	--	51.57	--	3,481.06
								12/12/2016	--	50.90	--	3,481.73
								04/17/2017	--	52.12	--	3,480.51
								10/24/2017	--	53.91	--	3,478.72
								12/08/2017	--	53.89	--	3,478.74
								03/19/2018	--	53.61	--	3,479.02
								12/05/2018	--	57.61	--	3,475.02
								04/23/2019	--	55.69	--	3,476.94
								12/09/2019	--	55.07	--	3,477.56
								04/06/2020	--	54.26	--	3,478.37
								09/21/2020	--	55.49	--	3,477.14
								04/26/2021	--	56.04	--	3,476.59
								01/04/2022	--	56.04	--	3,476.59
MW-19	06/17/2009	79.42	4	3,540.6	41 - 76	2.74	3,543.34	05/20/2013	67.10	71.15	4.05	3,475.03
								10/15/2013	67.00	71.10	4.10	3,475.11
								05/14/2014	62.75	73.30	10.55	3,477.43
								10/14/2014	66.50	70.10	3.60	3,475.76
								04/21/2015	66.00	72.45	6.45	3,475.41
								12/07/2015	65.50	68.60	3.10	3,476.91
								04/11/2016	67.24	69.66	2.42	3,475.37

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								12/13/2016	65.78	68.00	2.22	3,476.89
								04/17/2017	68.00	70.41	2.41	3,474.62
								10/25/2017	69.85	71.30	1.45	3,473.06
								12/08/2017	71.97	72.10	0.13	3,471.33
								03/13/2018	72.56	72.85	0.29	3,470.69
								03/19/2018	72.54	72.75	0.21	3,470.74
								12/04/2018	73.89	74.05	0.16	3,469.40
								04/24/2019	74.87	75.03	0.16	3,468.42
								08/30/2019	75.37	75.63	0.26	3,467.82
								12/09/2019	--	73.70	--	3,469.64
								04/06/2020	--	73.19	--	3,470.15
								09/22/2020	74.41	74.42	0.01	3,468.93
								04/26/2021	75.84	75.86	0.02	3,467.49
								01/04/2022	Sheen	75.45	Sheen	3,467.89
MW-20	06/18/2009	79.39	4	3,538.7	41 - 76	2.77	3,541.47	05/20/2013	71.02	71.05	0.03	3,470.44*
								10/15/2013	70.40	70.45	0.05	3,471.05*
								05/14/2014	71.50	72.00	0.50	3469.82*
								10/14/2014	--	69.90	--	3,471.57
								04/21/2015	--	70.90	--	3,470.57
								12/07/2015	Sheen	70.71	Sheen	3,470.76
								04/11/2016	--	70.93	--	3,470.54
								12/12/2016	--	71.00	--	3,470.47
								04/17/2017	--	71.91	--	3,469.56
								10/25/2017	--	72.13	--	3,469.34
								12/08/2017	--	72.59	--	3,468.88
								03/13/2018	--	73.20	--	3,468.27
								03/19/2018	--	72.96	--	3,468.51
								12/04/2018	--	73.73	--	3,467.74
								04/24/2019	--	74.50	--	3,466.97
								12/09/2019	--	72.57	--	3,468.90
								04/07/2020	--	73.00	--	3,468.47
								09/22/2020	--	74.21	--	3,467.26
								04/27/2021	--	75.14	--	3,466.33
								01/04/2022	--	74.66	--	3,466.81
MW-21	06/18/2009	81.48	4	3,540.2	43 - 78	2.95	3,543.15	05/20/2013	66.65	67.65	1.00	3,476.20
								10/15/2013	67.40	68.60	1.20	3,475.39
								05/14/2014	69.23	70.50	1.27	3,473.54
								10/14/2014	66.80	67.92	1.12	3,476.01
								04/21/2015	67.55	68.60	1.05	3,475.29
								12/07/2015	67.80	68.80	1.00	3,475.05
								04/11/2016	67.71	68.83	1.12	3,475.10
								12/12/2016	67.80	69.41	1.61	3,474.87
								04/17/2017	70.60	71.78	1.18	3,472.20
								10/25/2017	69.50	71.10	1.60	3,473.17
								12/08/2017	70.97	70.98	0.01	3,472.18
								03/13/2018	72.10	74.90	2.80	3,470.21
								03/19/2018	72.10	72.45	0.35	3,470.95
								12/04/2018	68.26	77.83	9.57	3,472.02
								08/30/2019	74.00	74.30	0.30	3,475.55
								12/09/2019	66.68	66.73	0.05	3,476.42
								04/07/2020	69.27	69.53	0.26	3,473.62
								09/22/2020	72.63	73.45	0.82	3,470.27
								04/27/2021	74.31	74.65	0.34	3,468.74
								01/04/2022	71.73	76.41	4.68	3,470.02
MW-22	06/19/2009	41.07	4	3,542.9	13 - 38	2.97	3,545.87	05/20/2013	--	20.90	--	3,524.97

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Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								10/15/2013	--	17.40	--	3,528.47
								05/14/2014	--	21.51	--	3,524.36
								10/14/2014	--	15.55	--	3,530.32
								04/21/2015	Sheen	18.60	Sheen	3,527.27
								12/07/2015	--	17.95	--	3,527.92
								04/11/2016	--	19.77	--	3,526.10
								12/12/2016	--	20.18	--	3,525.69
								04/17/2017	--	20.36	--	3,525.51
								10/25/2017	--	20.51	--	3,525.36
								12/08/2017	--	21.23	--	3,524.64
								03/13/2018	--	22.15	--	3,523.72
								03/19/2018	--	22.22	--	3,523.65
								12/04/2018	--	21.60	--	3,523.65
								04/25/2019	--	22.61	--	3,524.27
								12/09/2019	--	21.36	--	3,524.51
								04/06/2020	--	22.60	--	3,523.27
								09/22/2020	--	23.15	--	3,522.72
								04/27/2021	--	23.89	--	3,521.98
								01/04/2022	--	23.22	--	3,522.65
MW-23	06/19/2009	85.74	4	3,539.2	49 - 84	3.01	3,542.21	05/20/2013	--	72.71	--	3,469.50
								10/14/2013	--	72.72	--	3,469.49
								05/14/2014	--	74.70	--	3,467.51
								10/13/2014	--	72.37	--	3,469.84
								04/20/2015	--	71.98	--	3,470.23
								12/07/2015	--	72.65	--	3,469.56
								04/11/2016	--	72.94	--	3,469.27
								12/12/2016	--	72.95	--	3,469.26
								04/17/2017	--	74.02	--	3,468.19
								10/24/2017	--	75.11	--	3,467.10
								12/08/2017	--	76.81	--	3,465.40
								03/13/2018	--	77.51	--	3,464.70
								03/19/2018	--	77.67	--	3,464.54
								12/04/2018	--	78.33	--	3,463.88
								04/23/2019	78.83	78.92	0.09	3,463.29
								08/30/2019	79.38	79.40	0.02	3,462.81
								12/09/2019	77.90	78.00	0.10	3,464.21
								04/06/2020	Sheen	78.04	Sheen	3,464.17
								09/21/2020	78.71	78.81	0.10	3,463.47
								04/27/2021	79.72	79.80	0.08	3,462.47
								01/04/2022	79.26	79.28	0.02	3,462.94
MW-24	09/28/2011	36.45	2	3,526.9	19 - 33	2.24	3,529.10	05/30/2012	--	29.69	--	3,499.41
								09/24/2012	--	33.00	--	3,496.10
								05/14/2014	--	29.50	--	3,499.60
								10/13/2014	--	21.69	--	3,507.41
								04/20/2015	--	24.92	--	3,504.18
								12/07/2015	--	24.50	--	3,504.60
								04/11/2016	--	24.89	--	3,504.21
								12/12/2016	--	22.10	--	3,507.00
								04/17/2017	--	23.65	--	3,505.45
								10/24/2017	--	27.38	--	3,501.72
								12/08/2017	--	29.50	--	3,499.60
								03/13/2018	--	N/D	--	N/D
								12/04/2018	--	32.53	--	3,496.57
								04/24/2019	--	34.90	--	3,494.20
								12/09/2019	--	28.06	--	3,501.04
								04/06/2020	--	31.90		3,497.20

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								09/21/2020	--	34.69	--	3,494.41
								04/27/2021	--	35.59	--	3,493.51
								01/04/2022	--	26.66	--	3,502.44
EB-01	03/29/2004	37.05	1	3,491.5	33 - 38	0.65	3,492.15	05/20/2013	DRY			
								10/14/2013	DRY			
								05/14/2014	DRY			
								10/13/2014	DRY			
								04/20/2015	DRY			
								12/07/2015	DRY			
								04/11/2016	DRY			
								12/12/2016	DRY			
								04/17/2017	DRY			
								10/24/2017	DRY			
								12/08/2017	DRY			
								03/13/2018	DRY			
								12/04/2018	DRY			
								04/23/2019	DRY			
								12/09/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/27/2021	DRY			
								01/05/2022	DRY			
EB-02	03/29/2004	57.47	2	3,522.6	35 - 55	2.74	3,525.34	05/20/2013	Sheen	42.05	Sheen	3,483.29
								10/14/2013	--	42.45	--	3,482.89
								05/14/2014	--	42.72	--	3,482.62
								10/13/2014	--	43.40	--	3,481.94
								04/20/2015	--	43.70	--	3,481.64
								12/07/2015	--	44.16	--	3,481.18
								04/11/2016	--	44.02	--	3,481.32
								12/12/2016	--	44.00	--	3,481.34
								04/17/2017	--	44.13	--	3,481.21
								10/24/2017	--	44.85	--	3,480.49
								12/08/2017	--	44.90	--	3,480.44
								03/13/2018	--	N/D	--	N/D
								12/05/2018	--	45.07	--	3,480.27
								04/23/2019	--	45.02	--	3,480.32
								12/09/2019	--	45.17	--	3,480.17
								04/06/2020	--	45.25	--	3,480.09
								09/21/2020	--	46.03	--	3,479.31
								04/26/2021	--	45.45	--	3,479.89
								01/04/2022	--	45.82	--	3,479.52
EB-03	03/30/2004	69.84	2	3,517.8	46 - 66	3.25	3,521.05	05/20/2013	61.32	61.36	0.04	3,459.72
								10/14/2013	Sheen	60.78	Sheen	3,460.27
								05/14/2014	61.65	61.69	0.04	3,459.39
								10/13/2014	--	58.95	--	3,462.10
								04/20/2015	Sheen	60.75	Sheen	3,460.30
								12/07/2015	60.80	61.60	0.80	3,460.01
								04/11/2016	60.85	61.95	1.1	3,459.87
								12/12/2016	60.80	61.20	0.40	3,460.13
								04/17/2017	60.85	61.35	0.50	3,460.05
								10/24/2017	60.91	61.09	0.18	3,460.09
								12/08/2017	61.05	61.10	0.05	3,459.99
								03/13/2018	63.69	64.07	0.38	3,457.25
								12/03/2018	60.87	60.88	0.01	3,460.18
								04/24/2019	65.30	65.74	0.44	3,455.62

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								08/30/2019	66.94	67.43	0.49	3,453.93
								12/10/2019	60.83	60.91	0.08	3,460.14
								04/06/2020	Sheen	62.28	Sheen	3,458.77
								09/21/2020	64.87	64.89	0.02	3,456.17
								04/27/2021	67.08	67.33	0.25	3,453.90
								01/05/2022	--	64.60	--	3,456.45
EB-04	03/31/2004	53.91	2	3,505.3	31 - 51	3.08	3,508.38	05/20/2013	Sheen	52.63	Sheen	3,455.75
								10/14/2013	--	52.70	--	3,455.68
								05/14/2014	DRY			
								10/13/2014	DRY			
								04/20/2015	--	50.81	--	3,457.57
								12/07/2015	DRY			
								04/11/2016	DRY			
								12/12/2016	DRY			
								04/17/2017	DRY			
								10/24/2017	DRY			
								12/08/2017	DRY			
								03/13/2018	DRY			
								12/05/2018	DRY			
								04/23/2019	DRY			
								12/10/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/27/2021	DRY			
								01/05/2022	DRY			
EB-05	03/31/2004	57.93	2	3,523.7	44 - 54	2.91	3,526.61	05/20/2013	Sheen	50.15	Sheen	3,476.46
								10/14/2013	--	49.92	--	3,476.69
								05/14/2014	--	50.65	--	3,475.96
								10/13/2014	--	51.00	--	3,475.61
								04/20/2015	--	50.41	--	3,476.20
								12/07/2015	--	51.10	--	3,475.51
								04/11/2016	--	50.66	--	3,475.95
								12/12/2016	--	50.50	--	3,476.11
								04/17/2017	--	51.06	--	3,475.55
								10/24/2017	--	52.13	--	3,474.48
								12/08/2017	--	53.05	--	3,473.56
								03/13/2018	--	--	--	--
								12/05/2018	--	53.25	--	3,473.36
								04/23/2019	--	53.42	--	3,473.19
								12/10/2019	--	53.57	--	3,473.04
								04/06/2020	--	52.75	--	3,473.86
								09/21/2020	--	53.38	--	3,473.23
								04/26/2021	--	53.85	--	3,472.76
								01/05/2022	--	53.93	--	3,472.68
EB-06	03/31/2004	75.07	1	3,555.6	72 - 82	1.03	3,556.63	05/20/2013	--	73.45	--	3,483.18
								10/14/2013	Sheen	73.04	Sheen	3,483.59
								05/14/2014	--	73.98	--	3,482.65
								10/13/2014	--	74.70	--	3,481.93
								04/20/2015	--	73.80	--	3,482.83
								12/07/2015	--	75.28	--	3,481.35
								04/11/2016	--	74.76	--	3,481.87
								12/12/2016	--	73.76	--	3,482.87
								04/07/2017	--	75.07	--	3,481.56
								10/24/2017	--	76.00	--	3,480.63
									Well Obstructed			

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EB-07	04/01/2004	56.08	2	3,501.3	43 - 53	2.67	3,503.97	05/20/2013	--	53.92	--	3,450.05
								10/15/2013	--	54.58	--	3,449.39
								05/14/2014	DRY			
								10/13/2014	--	47.90	--	3,456.07
								04/20/2015	--	49.19	--	3,454.78
								12/07/2015	--	50.00	--	3,453.97
								04/11/2016	--	50.00	--	3,453.97
								12/12/2016	--	49.85	--	3,454.12
								04/17/2017	--	50.02	--	3,453.95
								10/24/2017	--	50.41	--	3,453.56
								12/08/2017	--	50.83	--	3,453.14
								03/13/2018	--	N/D	--	N/D
								12/05/2018	--	51.11	--	3,452.86
								04/23/2019	--	51.48	--	3,452.49
								12/09/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/26/2021	DRY			
								01/04/2022	DRY			
EB-08	04/02/2004	86.22	2	3,533.8	66 - 81	3.27	3,537.07	05/20/2013	71.20	73.60	2.40	3,465.15
								10/14/2013	70.90	73.20	2.30	3,465.48
								05/14/2014	72.55	74.90	2.35	3,463.82
								10/13/2014	69.50	72.00	2.50	3,466.82
								04/20/2015	70.00	71.70	1.70	3,466.56
								12/07/2015	71.00	72.10	1.10	3,465.74
								04/11/2016	71.61	72.70	1.09	3,465.13
								12/12/2016	70.55	71.75	1.20	3,466.16
								04/17/2017	71.48	72.60	1.12	3,465.25
								10/24/2017	73.77	74.87	1.10	3,465.20
								12/08/2017	73.39	73.40	0.01	3,463.68
								03/13/2018	74.44	74.91	0.47	3,462.49
								12/04/2018	73.50	74.35	0.85	3,463.32
								04/24/2019	75.52	76.36	0.84	3,461.30
								08/30/2019	76.86	78.00	1.14	3,459.66
								12/10/2019	75.17	75.35	0.18	3,461.72
								04/06/2020	74.59	74.73	0.14	3,462.34
								09/21/2020	78.46	78.69	0.23	3,458.54
								04/27/2021	78.85	79.97	1.12	3,457.88
								01/05/2022	78.43	78.54	0.11	3,458.61
P-01	12/29/2005	54.60	2	3,527.9	40 - 50	2.31	3,530.21	05/20/2013	Sheen	50.87	Sheen	3,479.34
								10/14/2013	--	50.85	--	3,479.36
								05/14/2014	--	50.95	--	3,479.26
								10/13/2014	--	50.82	--	3,479.39
								04/20/2015	--	50.93	--	3,479.28
								12/07/2015	Sheen	50.95	Sheen	3,479.26
								04/11/2016	--	50.89	--	3,479.32
								12/12/2016	--	50.85	--	3,479.36
								04/17/2017	--	51.02	--	3,479.19
								10/24/2017	--	53.40	--	3,476.81

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								12/08/2017	--	50.94	--	3,479.27
								03/13/2018	--	--	--	--
								12/05/2018	--	50.86	--	3,479.35
								04/23/2019	--	50.85	--	3,479.36
								12/10/2019	--	50.89	--	3,479.32
								04/06/2020	--	50.88	--	3,479.33
								09/21/2020	--	50.92	--	3,479.29
								04/26/2021	--	50.88	--	3,479.33
								01/05/2022	--	50.95	--	3,479.26
P-02	12/27/2005	27.45	2	3,542.3	19.5 - 22.5	2.43	3,544.73	05/20/2013	--	22.70	--	3,522.03
								10/14/2013	--	20.92	--	3,523.81
								05/14/2014	--	22.15	--	3,522.58
								10/13/2014	--	18.80	--	3,525.93
								04/20/2015	--	21.14	--	3,523.59
								12/07/2015	--	20.55	--	3,524.18
								04/11/2016	--	21.44	--	3,523.29
								12/12/2016	--	21.06	--	3,523.67
								04/17/2017	--	21.09	--	3,523.64
								10/24/2017	--	21.58	--	3,523.15
								12/08/2017	--	21.87	--	3,522.86
								03/13/2018	--	--	--	--
								12/04/2018	--	21.70	--	3,523.03
								04/24/2019	--	22.24	--	3,522.49
								12/09/2019	--	20.65	--	3,524.08
								04/06/2020	--	21.79	--	3,522.94
								09/21/2020		22.28		3,522.45
								04/26/2021	--	22.54	--	3,522.19
								01/04/2022	--	21.51	--	3,523.22
P-03	12/27/2005	78.65	2	3,534.4	58 - 78	2.43	3,536.83	05/20/2013	--	72.72	--	3,464.11
								10/14/2013	--	56.39	--	3,480.44
								05/14/2014	--	73.91	--	3,462.92
								10/13/2014	--	40.70	--	3,496.13
								04/20/2015	--	56.65	--	3,480.18
								12/07/2015	--	44.93	--	3,491.90
								04/11/2016	--	52.22	--	3,484.61
								12/12/2016	--	40.50	--	3,496.33
								04/17/2017	--	69.50	--	3,467.33
								10/24/2017	--	78.82	--	3,458.01
								12/08/2017	--	75.03	--	3,461.80
								03/13/2018	--	--	--	--
								12/04/2018	--	74.39	--	3,462.44
								04/26/2019	--	74.36	--	3,462.47
								12/10/2019	--	73.82	--	3,463.01
								04/06/2020	--	74.45	--	3,462.38
								09/21/2020	--	74.67	--	3,462.16
								04/26/2021	--	74.79	--	3,462.04
								01/05/2022	--	66.26	--	3,470.57
P-04	12/28/2005	61.65	2	3,513.5	51 - 61	2.27	3,515.77	05/20/2013	DRY			
								10/14/2013	DRY			

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								05/14/2014	--	56.80	--	3,458.97
								10/13/2014	--	59.30	--	3,456.47
								04/20/2015	--	60.40	--	3,455.37
								12/07/2015	DRY			
								04/11/2016	DRY			
								12/12/2016	DRY			
								04/17/2017	DRY			
								10/24/2017	DRY			
								12/08/2017	DRY			
								03/13/2018	DRY			
								12/04/2018	DRY			
								04/23/2019	DRY			
								12/10/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/26/2021	DRY			
								01/04/2022	DRY			
P-05	12/28/2005	47.35	2	3,504.9	35 - 45	2.58	3,507.48	05/20/2013	--	47.34	--	3,460.14
								10/14/2013	--	47.30	--	3,460.18
								05/14/2014	--	47.30	--	3,460.18
								10/13/2014	--	47.30	--	3,460.18

Table 1
AP-112
Monitor Well Completion and Gauging Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well Information								Groundwater Data				
Well ID	Date Drilled	Total Depth (TOC)	Well Dia. (Inches)	Surface Elevation (AMSL)	Screen Interval (BGS)	Casing Stickup (Feet)	TOC Elevation (AMSL)	Date Gauged	Depth to Product (Feet)	Depth to Water (Feet)	Product Thickness (Feet)	Corrected Water Elevation (AMSL)
								04/20/2015	--	47.00	--	3,460.48
								12/07/2015	--	47.14	--	3,460.34
								04/11/2016	--	47.30	--	3,460.18
								12/12/2016	--	47.35	--	3,460.13
								04/17/2017	--	47.33	--	3,460.15
								10/24/2017	DRY			
								12/08/2017	DRY			
								03/13/2018	--	--	--	--
								12/04/2018	--	47.34	--	3,460.14
								04/24/2019	DRY			
								12/10/2019	DRY			
								04/06/2020	DRY			
								09/21/2020	DRY			
								04/26/2021	DRY			
								01/04/2022	DRY			
AS-1	11/15/2017	77.00	4	--	51 - 62.27	-0.25	--	11/17/2017	62.40	62.44	0.04	--
								12/07/2017	63.55	63.66	0.11	--
								12/04/2018	59.28	61.13	1.85	--
								04/16/2020	H2S Present in Well			
								09/22/2020	H2S Present in Well			
								04/27/2021	DRY			
								01/04/2022	DRY			

Notes: Wells drilled Eades Drilling, Atkins Engineering and Scarborough Drilling. Wells completed with Schedule 40 threaded PVC except EB-06 (completed with 1-inch poly tubing)
All values are in feet, unless otherwise noted.
Survey datum based upon NAD 1927/NAVD 1929
BGS - below ground surface
TOC - top of casing
AMSL: Feet above mean sea level
* Groundwater corrected for LNAPL thickness assuming 0.70 specific gravity.
** Emulsion observed in well
>: LNAPL observed over entire screen interval

Table 2
AP-112
MW-21 Bailout Test Results
Empire Abo Plant, Eddy County, New Mexico
November 1, 2021

Measurement No.	Time Sec	Time Min	Depth to LNAPL	Depth to H2O	Displacement from Static LNAPL	Displacement from Static H2O
0	0	0	80.1	80.11	8.28	2.7
1	30	0.5	80.09	80.1	8.27	2.69
2	60	1	80.08	80.09	8.26	2.68
3	90	1.5	77.3	78.1	5.84	0.69
4	120	2	77.23	78.02	5.41	0.61
5	150	2.5	77.18	77.97	5.36	0.56
6	180	3	77.12	77.91	5.3	0.5
7	210	3.5	77.05	77.86	5.23	0.45
8	240	4	77.00	77.8	5.18	0.39
9	270	4.5	76.95	77.73	5.13	0.32
10	300	5	76.89	77.67	5.07	0.26
11	360	6	76.8	77.6	4.98	0.19
12	420	7	76.72	77.52	4.9	0.11
13	480	8	76.62	77.43	4.8	0.02
14	540	9	76.53	77.35	4.71	-0.06
15	600	10	76.45	77.27	4.63	-0.14
16	720	12	76.31	77.13	4.49	-0.28
17	840	14	76.2	77.01	4.38	-0.4
18	960	16	77.09	76.92	*5.27	-0.49
19	1,080	18	75.98	76.81	4.16	-0.6
20	1,200	20	75.88	76.7	4.06	-0.71
21	1,320	22	75.79	76.59	3.97	-0.82
22	1,440	24	75.67	76.5	3.85	-0.91
23	1,560	26	75.58	76.42	3.76	-0.99
24	1,680	28	75.5	76.33	3.68	-1.08
25	1,800	30	75.39	76.24	3.57	-1.17
26	2,100	35	75.15	76.02	3.33	-1.39
27	2,400	40	74.95	75.81	3.13	-1.6
28	2,700	45	74.76	75.62	2.94	-1.79
29	3,000	50	74.58	75.45	2.76	-1.96
30	3,300	55	74.4	75.26	2.58	-2.15
31	3,600	60	74.25	75.12	2.43	-2.29
32	3,900	65	74.1	74.97	2.28	-2.44
33	4,200	70	73.97	74.82	2.15	-2.59
34	4,500	75	73.85	74.71	2.03	-0.27
35	4,800	80	73.74	74.6	1.92	-2.81
36	5,100	85	73.62	74.5	1.8	-2.91
37	5,400	90	73.52	74.4	1.7	-3.01
38	5,700	95	73.42	74.3	1.6	-3.11
39	6,000	100	73.32	74.23	1.5	-3.18
40	6,300	105	73.27	74.12	1.45	-3.29
41	6,600	110	73.16	74.05	1.34	-3.36
42	6,900	115	73.08	73.98	1.26	-3.43
43	7,200	120	73.01	73.9	1.19	-3.51
44	9,000	150	72.63	73.55	0.81	-3.86
45	110,580	1,843	71.78	72.71	-0.04	-4.7

Table 2
AP-112
MW-21 Bailout Test Results
Empire Abo Plant, Eddy County, New Mexico
November 1, 2021

Measurement No.	Time Sec	Time Min	Depth to LNAPL	Depth to H2O	Displacement from Static LNAPL	Displacement from Static H2O
46	112,380	1,873	71.74	72.71	-0.08	-4.7

Static D-LNAPL	Static D-H2O	Corrected D-GW
71.82	77.41	73.71

Worksheet

Specific Gravity Estimated at 0.72 g/cm^3

Charting and calculation based upon *Determination of a Realistic Estimate of Formation Product Thickness Using Monitor Wells: A Field Bailout Test* by Thomas S. Gruszczenski (1987, NGWA)

Step Number	
5 – Inflection Point	1,873 min
6 – S.G. corrected	73.71
7 – Measured Product Thickness	5.59
8 – Inflection Product Thickness	**0.97**
9 – Capillary Fringe Height	**4.62**

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	**0.7**	**1**	**0.62**
MW-02	03/27/2007	<0.0002	<0.0003	<0.0007	<0.0009
	06/18/2007	<0.0002	<0.0003	<0.0007	<0.0009
	09/17/2007	<0.0002	<0.0003	<0.0007	<0.0009
	12/10/2007	**0.0221**	0.0397	0.00746	0.06627
	03/11/2008	<0.0008	<0.002	<0.002	<0.003
	09/16/2008	**8.91**	**2.06**	**3.55**	**2.79**
	03/10/2009	**1.79**	0.107	<0.1	<0.150
	09/15/2009	**0.315**	0.0605	<0.1	0.0434
	03/31/2010	**0.210**	0.0383	<0.004	0.0141
	09/14/2010	**0.0854**	0.0125	<0.002	0.00947
	03/16/2011	<0.001	<0.001	<0.001	<0.001
	10/13/2011	<0.001	<0.001	<0.001	<0.001
	03/13/2012	<0.0008	<0.002	<0.002	<0.003
	09/28/2012	<0.0008	<0.002	<0.002	<0.003
	05/22/2013	<0.0008	<0.002	<0.002	<0.003
	10/17/2013	**0.0057**	<0.002	<0.002	<0.003
	05/14/2014	Insufficient Water for Sample Collection			
	10/15/2014	<0.0008	<0.002	<0.002	<0.003
	04/23/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/13/2016	<0.002	<0.006	<0.006	<0.009
	12/14/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/18/2017	0.0038	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/25/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/11/2019	0.0016	<0.00600	<0.00600	<0.00600
	04/07/2020	Insufficient Water for Sample Collection			
	09/23/2020	0.00217	0.000417	<0.000600	<0.000300
	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/05/2022	0.000815	0.000520	<0.000600	<0.000300
MW-03	03/27/2007	Insufficient Water for Sample Collection			
	06/18/2007	LNAPL Present, No Sample Collected			
	09/17/2007	LNAPL Present, No Sample Collected			
	12/10/2007	LNAPL Present, No Sample Collected			
	03/11/2008	LNAPL Present, No Sample Collected			
	09/16/2008	LNAPL Present, No Sample Collected			
	03/10/2009	LNAPL Present, No Sample Collected			
	09/15/2009	LNAPL Present, No Sample Collected			
	03/31/2010	LNAPL Present, No Sample Collected			
	09/14/2010	LNAPL Present, No Sample Collected			
	03/16/2011	LNAPL Present, No Sample Collected			
	10/13/2011	LNAPL Present, No Sample Collected			
	03/13/2012	LNAPL Present, No Sample Collected			
	09/28/2012	LNAPL Present, No Sample Collected			
	05/23/2013	**1.30**	0.318	0.00501	0.271
	10/16/2013	**2.42**	0.0823	<0.0200	0.158
	05/14/2014	LNAPL Present, No Sample Collected			
	10/15/2014	**2.87**	0.156	<0.04	0.199

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	**0.7**	**1**	**0.62**
	04/22/2015	**2.52**	0.273	<0.006	0.296
	12/09/2015	**2.12**	0.19	<0.120	0.238
	04/13/2016	**1.90**	0.191	0.00332	0.286
	12/13/2016	**4.80**	0.196	<0.120	0.25
	04/18/2017	**5.28**	0.208	<0.120	0.246
	10/25/2017	**4.74**	0.253	<0.100	0.261
	03/20/2018	--	--	--	--
	12/05/2018	**1.11**	<0.300	<0.300	0.181
	04/25/2019	**1.12**	<0.100	<0.100	0.184
	12/11/2019	**0.562**	<0.300	<0.300	<0.300
	04/08/2020	**0.0569**	0.00344	<0.0100	0.0204
	09/23/2020	LNAPL Present, No Sample Collected			
	04/28/2021	LNAPL Present, No Sample Collected			
	01/05/2022	LNAPL Present, No Sample Collected			
MW-08	03/28/2007	0.00373	<0.0003	<0.0007	0.00075
	06/19/2007	<0.0002	0.0005	<0.0007	<0.0009
	09/18/2007	**0.00056**	<0.0003	<0.0007	0.00113
	12/11/2007	**0.00044**	0.00196	<0.0007	0.00553
	03/11/2008	**0.00336**	0.00436	<0.002	<0.003
	09/17/2008	**0.0311**	0.00684	<0.002	0.00916
	03/11/2009	**0.0254**	0.00281	<0.002	0.0047
	09/16/2009	**0.0174**	<0.002	<0.002	<0.003
	03/31/2010	**0.00924**	<0.002	<0.002	<0.003
	09/15/2010	<0.0008	<0.002	<0.002	<0.003
	03/14/2011	<0.0008	<0.001	<0.001	<0.001
	10/13/2011	<0.001	<0.001	<0.001	<0.001
	09/27/2012	<0.001	<0.002	<0.002	<0.003
	05/22/2013	0.00373	<0.002	0.00218	<0.003
	10/16/2013	<0.0008	<0.002	<0.002	<0.003
	05/14/2014	<0.0008	<0.002	<0.002	<0.003
	10/15/2014	<0.0008	<0.002	<0.002	<0.003
	04/23/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/13/2016	0.00323	<0.006	<0.006	<0.009
	12/14/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/18/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/25/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/10/2019	<0.00200	<0.00600	<0.00600	<0.00600
	04/07/2020	<0.00100	<0.00100	<0.00200	<0.00100
	09/23/2020	0.0011	<0.000300	<0.000600	<0.000300
	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/04/2022	0.000880	0.000806	<0.000600	0.000783
MW-12	03/11/2009	**0.708**	<0.02	<0.02	<0.03
	09/15/2009	**2.11**	<0.04	<0.04	<0.04
	03/31/2010	**0.982**	<0.02	<0.02	<0.03
	09/14/2010	**0.128**	0.0110	<0.002	0.00871

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62
	03/16/2011	0.0093	<0.001	<0.001	<0.001
	10/13/2011	0.0072	<0.001	<0.001	<0.001
	03/13/2012	0.00469	<0.002	<0.002	<0.003
	09/28/2012	0.00122	<0.002	<0.002	<0.003
	05/22/2013	0.0495	<0.002	<0.002	<0.003
	10/16/2013	1.48	0.0385	<0.002	0.0307
	05/14/2014	<0.0008	<0.002	<0.002	<0.003
	10/15/2014	1.80	<0.2	<0.2	<0.3
	04/22/2015	0.00162	<0.006	<0.006	<0.009
	12/09/2015	0.0122	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/14/2016	0.0014	<0.00600	<0.00600	<0.00600
	04/18/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/26/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/10/2019	0.0308	0.0427	<0.00600	0.0242
	04/08/2020	0.000563	0.000649	<0.00200	<0.00100
	09/23/2020	0.000332	<0.000300	<0.000600	<0.000300
	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/05/2022	<0.000300	<0.000300	<0.000600	<0.000300
MW-15	09/16/2008	<0.0008	<0.002	<0.002	<0.003
	03/10/2009	<0.0008	<0.002	<0.002	<0.003
	09/15/2009	0.0104	<0.002	<0.002	<0.003
	03/30/2010	<0.0008	<0.002	<0.002	<0.003
	09/14/2010	0.00885	<0.002	<0.002	<0.003
	03/15/2011	<0.001	<0.001	<0.001	<0.001
	10/11/2011	<0.001	<0.001	<0.001	<0.003
	03/13/2012	<0.0008	<0.002	<0.002	<0.003
	09/27/2012	<0.0008	<0.002	<0.002	<0.003
	05/21/2013	<0.0008	<0.002	<0.002	<0.003
	10/15/2013	<0.0008	<0.002	<0.002	<0.003
	05/14/2014	Insufficient Water for Sample Collection			
	10/14/2014	<0.002	<0.006	<0.006	<0.009
	04/21/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/13/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/19/2017	0.00141	<0.00600	0.00813	<0.00600
	10/26/2017	0.00679	<0.00100	<0.00200	<0.00100
	03/20/2018	0.0014	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/07/2020	<0.00100	<0.00100	<0.00200	<0.00100
	09/22/2020	<0.000300	<0.000300	<0.000600	<0.000300
	04/27/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/04/2022	<0.000300	<0.000300	<0.000600	<0.000300
MW-17	07/15/2009	<0.0008	<0.002	<0.002	<0.003
	09/15/2009	1.97	<0.002	<0.002	<0.003

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62
	03/30/2010	0.0511	<0.002	<0.002	<0.003
	09/14/2010	0.331	<0.002	<0.002	<0.003
	03/16/2011	0.0223	<0.001	<0.001	<0.001
	10/12/2011	<0.007	<0.001	<0.001	<0.001
	03/13/2012	<0.0008	<0.002	<0.002	<0.003
	09/27/2012	<0.0008	<0.002	<0.002	<0.003
	05/21/2013	0.0427	<0.002	<0.002	<0.003
	10/15/2013	<0.0008	<0.002	<0.002	<0.003
	05/14/2014	Insufficient Water for Sample Collection			
	10/14/2014	<0.002	<0.006	<0.006	0.0248
	04/21/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/13/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/19/2017	0.00544	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00400	<0.0120	<0.0120	<0.0120
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/25/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/10/2019	<0.00200	<0.00600	<0.00600	<0.00600
	04/07/2020	<0.00100	0.000318	<0.00200	<0.00100
	09/22/2020	<0.000300	<0.000300	<0.000600	<0.000300
	04/27/2021	<0.000300	0.000389	<0.000600	<0.000300
	01/04/2022	0.000859	0.000971	0.00129	0.000358
MW-18	07/15/2009	0.0130	0.0101	<0.002	0.00703
	09/15/2009	0.0135	0.00408	<0.002	0.00399
	03/30/2010	<0.0008	<0.002	<0.002	<0.003
	09/13/2010	<0.0008	<0.002	<0.002	<0.003
	03/14/2011	<0.001	<0.001	<0.001	<0.003
	10/11/2011	<0.001	<0.001	<0.001	<0.003
	03/12/2012	<0.001	<0.001	<0.001	<0.003
	09/27/2012	<0.0008	<0.002	<0.002	<0.003
	05/20/2013	<0.0008	<0.002	<0.002	<0.003
	10/15/2013	<0.0008	<0.002	<0.002	<0.003
	05/13/2014	<0.002	<0.002	<0.002	<0.003
	10/14/2014	<0.002	<0.006	<0.006	<0.009
	04/21/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/14/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/19/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/21/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/26/2019	Missed Sample			
	12/10/2019	<0.00200	<0.00600	<0.00600	<0.00600
	04/07/2020	<0.00100	<0.00100	<0.00200	<0.00100
	09/22/2020	<0.000300	<0.000300	<0.000600	<0.000300
	04/27/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/04/2022	<0.000300	<0.000300	<0.000600	<0.000300

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62
MW-20	07/15/2009	0.0176	0.0133	<0.002	0.0161
	09/16/2009	0.0603	<0.002	<0.002	<0.003
	03/30/2010	LNAPL Present, No Sample Collected			
	09/13/2010	LNAPL Present, No Sample Collected			
	03/14/2011	LNAPL Present, No Sample Collected			
	10/11/2011	LNAPL Present, No Sample Collected			
	03/12/2012	LNAPL Present, No Sample Collected			
	09/27/2012	LNAPL Present, No Sample Collected			
	05/20/2013	LNAPL Present, No Sample Collected			
	10/15/2013	LNAPL Present, No Sample Collected			
	05/14/2014	LNAPL Present, No Sample Collected			
	10/15/2014	2.84	0.104	<0.04	<0.06
	04/22/2015	0.665	<0.150	<0.150	<0.225
	12/08/2015	0.556	<0.150	<0.150	<0.225
	04/12/2016	0.471	0.0384	0.0247	<0.09
	12/14/2016	0.521	0.0248	0.0186	0.0118
	04/18/2017	0.152	0.0162	0.00686	0.0121
	10/25/2017	0.0349	0.00172	<0.00400	0.00232
	03/20/2018	0.00863	<0.00600	<0.00600	<0.00600
	12/05/2018	0.00163	<0.00600	<0.00600	<0.00600
	04/26/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/11/2019	0.0252	0.0185	<0.00600	0.0106
	04/08/2020	0.00674	0.00215	<0.00200	0.000982
	09/23/2020	0.00063	<0.000300	<0.000600	<0.000300
	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/05/2022	<0.000300	<0.000300	<0.000600	<0.000300
MW-22	07/15/2009	6.35	0.653	0.00458	0.466
	09/15/2009	5.99	0.481	<0.200	0.328
	03/31/2010	2.83	0.438	<0.0400	0.149
	09/14/2010	23.8	0.576	<0.0400	0.369
	03/16/2011	31.3	1.27	<0.100	2.23
	09/27/2012	14.8	<0.400	<0.400	<0.600
	05/23/2013	10.2	<0.002	<0.002	<0.003
	10/16/2013	5.48	<0.002	<0.002	<0.003
	05/15/2014	5.21	<0.200	<0.200	<0.300
	10/15/2014	8.81	0.27	<0.2	<0.2
	04/22/2015	4.48	<1.2	<1.2	<1.8
	12/09/2015	3.54	<1.2	<1.2	<1.2
	04/13/2016	17.7	0.36	<0.6	<0.9
	12/13/2016	5.88	<0.600	<0.600	<0.600
	04/18/2017	2.29	0.355	<0.600	<0.600
	10/25/2017	2.56	0.269	<0.0400	0.112
	03/20/2018	1.69	0.167	<0.120	0.066
	12/05/2018	1.63	0.374	<0.120	0.14
	04/25/2019	1.46	0.193	<0.0400	0.0798
	12/11/2019	1.13	0.277	<0.120	0.12
	04/08/2020	1.22	0.280	<0.0400	0.139
	09/23/2020	2.63	0.713	<0.0120	0.362
	06/15/2021	5.63	0.320	<0.0120	0.217

Table 3
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Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	**0.7**	**1**	**0.62**
	01/05/2022	1.58	0.105	<0.0120	0.137
MW-23	07/15/2009	**2.26**	0.164	<0.002	0.102
	09/15/2010	**0.00803**	0.00323	<0.002	<0.003
	03/15/2011	**0.0085**	0.0148	<0.001	0.0074
	10/12/2011	**0.0053**	<0.001	<0.001	<0.001
	09/28/2012	**0.00372**	<0.002	<0.002	<0.003
	05/21/2013	**0.0234**	<0.002	<0.002	<0.003
	10/16/2013	**0.00599**	<0.002	<0.002	<0.003
	05/13/2014	**0.0875**	<0.002	<0.002	<0.003
	10/14/2014	**0.160**	0.00433	<0.0060	0.0409
	04/21/2015	**0.0645**	0.00215	<0.006	0.00304
	12/08/2015	**0.009**	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/13/2016	**0.0274**	<0.00600	<0.00600	<0.00600
	04/18/2017	**0.0443**	<0.00600	<0.00600	<0.00600
	10/26/2017	**0.318**	0.00598	<0.00200	0.0929
	03/20/2018	**0.899**	0.025	<0.0300	0.167
	12/05/2018	**0.0453**	<0.006	<0.006	0.0235
	04/26/2019	**0.653**	0.343	0.0355	0.287
	12/10/2019	LNAPL Present, No Sample Collected			
	04/07/2020	**2.64**	**0.779**	0.0236	0.542
	09/23/2020	LNAPL Present, No Sample Collected			
	04/27/2021	LNAPL Present, No Sample Collected			
	01/04/2022	LNAPL Present, No Sample Collected			
MW-24	03/13/2012	**4.16**	**1.78**	**0.00541**	**0.820**
	09/27/2012	**5.10**	**1.45**	<0.100	0.461
	05/20/2013	Insufficient Water for Sample Collection			
	10/15/2013	Insufficient Water for Sample Collection			
	05/14/2014	Insufficient Water for Sample Collection			
	10/14/2014	**1.04**	0.707	**0.00282**	0.447
	04/23/2015	**2.73**	0.717	<0.060	0.276
	12/08/2015	**2.14**	0.743	<0.120	0.354
	04/12/2016	**1.86**	0.478	<0.600	0.251
	12/13/2016	**1.62**	0.114	<0.00600	0.231
	04/18/2017	**1.98**	0.241	<0.120	0.244
	10/26/2017	**2.70**	0.0898	<0.0400	0.301
	03/20/2018	**4.20**	**0.892**	<0.300	0.427
	12/05/2018	**4.51**	**1.19**	<0.12	0.475
	04/25/2019	LNAPL Present, No Sample Collected			
	12/10/2019	**2.67**	0.898	<3.00	0.492
	04/07/2020	**2.73**	**0.821**	<0.100	0.331
	09/23/2020	**2.28**	0.367	<0.0120	0.169
	04/27/2021	**2.37**	0.18	<0.0120	0.0876
	01/04/2022	2.33	0.601	<0.0120	0.483
EB-02	03/27/2007	<0.0002	<0.0003	<0.0007	<0.0009
	06/18/2007	<0.0002	<0.0003	<0.0007	<0.0009
	09/17/2007	<0.0002	<0.0003	<0.0007	<0.0009
	12/10/2007	<0.0002	<0.0003	<0.0007	<0.0009

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62
	03/10/2008	<0.0008	<0.002	<0.002	<0.003
	09/16/2008	<0.0008	<0.002	<0.002	<0.003
	03/10/2009	<0.0008	<0.002	<0.002	<0.003
	09/15/2009	<0.0008	<0.002	<0.002	<0.003
	03/31/2010	<0.0008	<0.002	<0.002	<0.003
	09/13/2010	<0.0008	<0.002	<0.002	<0.003
	03/15/2011	<0.001	<0.001	0.0075	<0.001
	10/12/2011	<0.001	<0.001	<0.001	<0.001
	03/12/2012	<0.001	<0.001	<0.001	<0.001
	09/27/2012	<0.0008	<0.002	<0.002	<0.003
	05/20/2013	<0.0008	<0.002	<0.002	<0.003
	10/15/2013	<0.0008	<0.002	<0.002	<0.003
	05/13/2014	<0.0008	<0.002	<0.002	<0.003
	10/14/2014	<0.002	<0.006	<0.006	<0.009
	04/21/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/13/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/19/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/25/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/26/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/11/2019	0.00168	<0.00600	<0.00600	<0.00600
	04/07/2020	0.00598	0.00262	<0.00200	0.00105
	09/22/2020	<0.000300	<0.000300	<0.000600	<0.000300
	04/27/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/04/2022	<0.000300	<0.000300	<0.000600	<0.000300
EB-07	03/27/2007	<0.0002	<0.0003	<0.0007	<0.0009
	06/18/2007	<0.0002	<0.0003	<0.0007	<0.0009
	09/17/2007	<0.0002	<0.0003	<0.0007	<0.0009
	12/10/2007	0.00026	<0.0003	<0.0007	<0.0009
	03/10/2008	<0.0008	<0.002	<0.002	<0.003
	09/16/2008	<0.0008	<0.002	<0.002	<0.003
	03/10/2009	<0.0008	<0.002	<0.002	<0.003
	09/15/2009	0.0356	<0.002	<0.002	<0.003
	03/31/2010	0.00174	0.00286	<0.002	0.00374
	09/14/2010	<0.0008	<0.002	<0.002	<0.003
	03/14/2011	<0.001	<0.001	<0.001	<0.001
	10/12/2011	<0.001	<0.001	<0.001	<0.001
	03/12/2012	<0.001	<0.001	<0.001	<0.001
	09/27/2012	<0.0008	<0.002	<0.002	<0.003
	05/20/2013	<0.0002	<0.0003	<0.0007	<0.0009
	10/14/2013	Insufficient Water for Sample Collection			
	05/14/2014	Insufficient Water for Sample Collection			
	10/14/2014	<0.0002	<0.0003	<0.0007	<0.0009
	04/21/2015	<0.0002	<0.0003	<0.0007	<0.0009
	12/08/2015	Insufficient Water for Sample Collection			
	04/12/2016	Insufficient Water for Sample Collection			
	12/13/2016	<0.00200	<0.00600	<0.00600	<0.00600

Table 3
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Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62
	04/19/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/26/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/21/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	Insufficient Water for Sample Collection			
	04/26/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/10/2019	DRY			
	04/07/2020	DRY			
	09/22/2020	DRY			
	04/27/2021	DRY			
	01/04/2022	DRY			
P-02	03/27/2007	<0.0002	<0.0003	<0.0007	<0.0009
	06/19/2007	<0.0002	0.45	<0.0007	0.206
	09/17/2007	0.00206	0.00309	<0.0007	0.0075
	12/10/2007	**0.104**	0.0932	0.0230	0.1506
	03/10/2008	**0.016**	0.0259	<0.01	0.0434
	09/16/2008	**0.104**	0.0901	0.0208	0.138
	03/10/2009	<0.0008	<0.002	<0.002	<0.003
	09/15/2009	<0.0008	<0.002	<0.002	<0.003
	03/31/2010	0.00406	0.00839	<0.002	0.0112
	09/14/2010	**0.0621**	0.124	<0.002	0.0989
	03/16/2011	<0.001	<0.001	<0.001	<0.001
	10/12/2011	**0.02040**	0.161	<0.00100	0.124
	03/13/2012	<0.0008	<0.002	<0.002	<0.003
	09/27/2012	--	--	--	--
	05/21/2013	0.00139	<0.002	<0.002	<0.003
	10/16/2013	**0.12200**	<0.002	0.00816	0.00343
	05/15/2014	**0.09920**	0.00544	0.0118	0.00447
	10/14/2014	**0.13100**	0.168	<0.006	0.191
	04/21/2015	<0.002	<0.006	<0.006	<0.009
	12/08/2015	<0.002	<0.006	<0.006	<0.009
	04/12/2016	<0.002	<0.006	<0.006	<0.009
	12/13/2016	<0.00200	<0.00600	<0.00600	<0.00600
	04/19/2017	<0.00200	<0.00600	<0.00600	<0.00600
	10/26/2017	<0.00100	<0.00100	<0.00200	<0.00100
	03/20/2018	<0.00200	<0.00600	<0.00600	<0.00600
	12/05/2018	<0.00200	<0.00600	<0.00600	<0.00600
	04/26/2019	<0.000800	<0.00200	<0.00200	<0.00200
	12/10/2019	<0.00200	<0.00600	<0.00600	0.00647
	04/07/2020	<0.00100	<0.00100	<0.00200	<0.00100
	09/22/2020	<0.000300	<0.000300	<0.000600	<0.000300
	04/27/2021	<0.000300	<0.000300	<0.000600	<0.000300
	01/04/2022	0.000645	<0.000300	<0.000600	0.00280
P-05	03/27/2007	<0.0002	<0.0003	<0.0007	<0.0009
	06/18/2007	<0.0002	<0.0003	<0.0007	<0.0009
	09/17/2007	<0.0002	<0.0003	<0.0007	<0.0009
	12/10/2007	**0.00033**	<0.0003	<0.0007	0.00083
	03/10/2008	<0.0008	<0.002	<0.002	<0.003
	09/16/2008	<0.0008	<0.002	<0.002	<0.003

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	**0.7**	**1**	**0.62**
	03/10/2009	**0.00322**	<0.002	<0.002	<0.003
	09/15/2009	**0.0119**	<0.002	<0.002	<0.003
	03/31/2010	<0.0008	<0.002	<0.002	<0.003
	09/14/2010	**0.242**	<0.002	<0.002	0.00388
	03/16/2011	Insufficient Water for Sample Collection			
	10/12/2011	Insufficient Water for Sample Collection			
	03/13/2012	Insufficient Water for Sample Collection			
	09/27/2012	Insufficient Water for Sample Collection			
	05/20/2013	Insufficient Water for Sample Collection			
	10/14/2013	Insufficient Water for Sample Collection			
	05/14/2014	Insufficient Water for Sample Collection			
	10/13/2014	Insufficient Water for Sample Collection			
	04/20/2015	Insufficient Water for Sample Collection			
	12/08/2015	Insufficient Water for Sample Collection			
	04/12/2016	Insufficient Water for Sample Collection			
	12/13/2016	Insufficient Water for Sample Collection			
	04/19/2017	DRY			
	10/26/2017	DRY			
	03/20/2018	DRY			
	12/05/2018	DRY			
	04/25/2019	DRY			
	12/10/2019	DRY			
	04/07/2020	DRY			
	09/23/2020	DRY			
	04/26/2021	DRY			
	01/04/2022	DRY			
QA/QC					
Dup-1 (MW-08)	04/07/2020	**<0.00100**	<0.00100	<0.00200	<0.00100
Dup-2 (MW-22)	04/08/2020	**1.27**	0.280	<0.100	0.127
Dup-1 (EB-03)	09/22/2020				
Dup-2 (MW-15)	09/22/2020				
DUP-1 (EB-02)	04/27/2021	<0.000300	<0.000300	<0.000600	<0.000300
DUP-2 (MW-08)	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
DUP-3 (MW-12)	04/28/2021	<0.000300	<0.000300	<0.000600	<0.000300
DUP-1 (MW-15)	01/04/2022	<0.000300	<0.000300	<0.000600	<0.000300
DUP-2 (MW-20)	01/04/2022	<0.000300	<0.000300	<0.000600	<0.000300

Notes: Analysis performed by DHL Analytical, Round Rock, Texas
Volatiles analyzed by EPA SW-846 Method 8021B
All values reported in milligrams per liter (mg/L) equivelent to parts per million (ppm)

Table 3
AP-112
Groundwater Organic Sample Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Benzene	Ethylbenzene	Toluene	Total Xylenes
WQCC Human Health Standard (mg/L):		0.005	0.7	1	0.62

< values - Indicate the value is less than method detection limit (MDL).

Blue and bold indicates analyte concentration exceeds Water Quality Control Commission (WQCC) human health standard

P-05 Well approved for sample collection under modified program (October 23, 2017)

Table 4
AP-112
Groundwater General Inorganics Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

		Cations				Anions						
Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	250	600	1,000
MW-02	5/22/2013	--	--	--	--	--	--	--	--	124	1,670	2,900
	10/17/2013	626	89.8	20.5	106	289	<25.0	<25.0	289	150	1,860	2,910
	5/14/2014	Insufficient Water for Sample Collection										
	10/15/2014	643	75.5	18.9	120	234			234	112	1,560	2,960
	4/23/2015	521	105	20.3	120	227	<20.0	<20.0	227	136	1,800	2,750
	12/8/2015	540	114	20.8	120	276	<20.0	<20.0	276	125	1,650	3,020
	4/13/2016	580	76.9	21.2	114	204	<20.0	<20.0	204	113	1,740	3,060
	12/14/2016	577	79.0	10.7	87.8	206	<20.0	<20.0	206	103	1,670	2,770
	4/18/2017	603	80.5	11.9	109	216	<20.0	<20.0	216	170	1,790	2,770
	10/25/2017	584	140.0	9.33	96.3	114	<20.0	<20.0	114	107	1,810	3,190
	3/20/2018	645	138.0	10.50	110	--	--	--	--	122	1,870	3,080
	12/5/2018	570	158	11	97	112	<20.0	<20	112	97	2020	3100
	4/25/2019	561	133	10.3	102	154	<10.0	<10.0	154	111	1,850	3,190
	12/10/2019	449	606	9.10	108	<20.0	<20.0	<20.0	<20.0	173	5,200	7,390
	04/08/2020	Insufficient Water for Sample Collection										
	04/28/2021	513	760	10.2	103	<10.0	<10.0	<10.0	<10.0	77.7	6,670	9,370
MW-03	5/23/2013	--	--	--	--	--	--	--	--	140	1,680	3,190
	10/16/2013	597	85.1	13.2	139	605	<50.0	<50.0	605	175	1,340	2,830
	5/15/2014	LNAPL Present, No Sample Collected										
	10/15/2014	588	92.2	15.4	147	663	<10.0	<10.0	663	132	1,180	2,860
	4/22/2015	428	98.0	11.3	110	563	<20.0	<20.0	563	118	1,110	2,460
	12/9/2015	475	92.7	12.3	112	627	<20.0	<20.0	627	104	1,220	2,640
	4/13/2016	481	95.1	12.4	107	585	<20.0	<20.0	585	123	1,270	3,020
	12/13/2016	573	61.7	17.6	110	699	<20.0	<20.0	699	119	1,310	2,960
	4/18/2017	585	62.6	15.8	115	586	<20.0	<20.0	586	95.2	1,300	2,530
	10/25/2017	612	64.4	14.9	105	612	<20.0	<20.0	612	89.7	1,380	2,920
	12/5/2018	615	79	12	107	507	<20.0	<20	507	105	1690	3030
	4/25/2019	574	81.7	11.9	109	369	<10.0	<10.0	369	113	1,500	3,010
	12/11/2019	701	86.9	12.2	114	815	<20.0	<20.0	815	114	1,480	3,480

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Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	250	600	1,000
	04/08/2020	686	72.8	12.4	111	656	<20.0	<20.0	656	99.6	1,400	3,030
	04/26/2021	LNAPL Present, No Sample Collected										
MW-08	5/22/2013	--	--	--	--	--	--	--	--	278	1,610	3,180
	10/16/2013	431	103	8.37	246	479	<12.5	<12.5	479	235	1,240	2,460
	5/14/2014	538	120	7.54	279	451	<10.0	<10.0	451	261	1,630	2,490
	10/15/2014	517	125	7.98	316	465	<10	<10	465	253	1,390	3,080
	4/23/2015	432	125	7.21	295	447	<20.0	<20.0	447	261	1,560	2,770
	12/8/2015	450	123	7.84	278	461	<20.0	<20.0	461	274	1,550	3,060
	4/13/2016	471	120	8.18	270	444	<20.0	<20.0	444	329	1,700	3,320
	12/14/2016	450	123	8.36	283	470	<20.0	<20.0	470	325	1,460	2,970
	4/18/2017	509	131	8.67	285	692	<20.0	<20.0	692	339	1570	3020
	10/25/2017	526	126	8.12	287	410	<20.0	<20.0	410	355	1450	3300
	3/20/2018	595	141	8.48	305	--	--	--	--	386	1580	3310
	12/5/2018	558	128	8.10	273	412	<20.0	<20	412	453	1550	3480
	4/25/2019	557	136	7.60	279	367	<20.0	<20.0	367	464	1,640	3,600
	12/10/2019	518	143	9.23	308	431	<20.0	<20.0	431	520	1,410	3,410
	04/07/2020	534	132	9.02	280	442	<20.0	<20.0	442	524	1420	3370
	04/28/2021	619	140	9.05	283	420	<10.0	<10.0	420	530	1,470	3,550
MW-12	5/22/2013	--	--	--	--	--	--	--	--	109	2,230	3,770
	10/16/2013	576	208	5.72	88.4	373	<12.5	<12.5	373	106	1,950	3,290
	5/14/2014	562	260	5.95	104	309	<10.0	<10.0	309	86	2,340	2,470
	10/15/2014	672	170	6.40	99.9	370	<10.0	<10.0	370	79	1,690	3,470
	4/22/2015	529	249	5.68	93.6	497	<20.0	<20.0	497	86.8	2,090	3,650
	12/9/2015	537	245	5.26	87.9	461	<20.0	<20.0	461	79.8	1,970	3,590
	4/12/2016	512	216	4.95	102	341	<20.0	<20.0	341	91.7	2,130	3,330
	12/14/2016	525	196	5.70	69.2	438	<20.0	<20.0	438	80.5	1,820	3,420
	4/18/2017	536	282	5.03	86.7	336	<20.0	<20.0	366	76.7	2,370	3,520
	10/25/2017	530	288	4.95	94.8	252	<20.0	<20.0	252	84.4	2,340	3,000
	3/20/2018	559	300	5.37	109	--	--	--	--	103	2,320	3,680

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Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	250	600	1,000
	12/5/2018	520	290	5.18	90	351	<20.0	<20	351	82	**2410**	**3980**
	4/26/2019	513	307	5.20	103	322	<10.0	<10.0	322	108	**2,260**	**3,820**
	12/10/2019	550	350	5.49	74.5	350	<20.0	<20.0	350	62	**2,450**	**4,190**
	04/08/2020	539	371	5.40	83.4	287	<20.0	<20.0	287	78.4	**2780**	**4230**
	04/28/2021	595	392	5.47	103.0	336	<10.0	<10.0	336	94.9	**2,700**	**4,510**
MW-15	5/21/2013	--	--	--	--	--	--	--	--	**6,360**	**95,600**	**141,000**
	10/15/2013	451	2,810	104	3,490	423	<25.0	<25.0	423	**1,320**	**16,400**	**28,500**
	5/14/2014	Insufficient Water for Sample Collection										
	10/14/2014	542	1,560	56.7	2,010	281	<20.0	<20.0	281	**774**	**9,190**	**16,400**
	4/21/2015	424	4,940	173	6,280	881	<20.0	<20.0	881	**2,110**	**29,100**	**47,800**
	12/8/2015	428	5,870	201	7,560	747	<20.0	<20.0	747	**2,480**	**39,800**	**59,400**
	4/12/2016	425	4,600	162	5,940	608	<20.0	<20.0	608	**2,220**	**31,600**	**53,600**
	12/13/2016	405	3,010	106	3,940	430	<20.0	<20.0	430	**1,520**	**18,500**	**33,800**
	4/19/2017	494	8,200	285	10,500	969	<20.0	<20.0	969	**3,670**	**55000**	**80900**
	10/26/2017	469	6,600	209	8,820	838	<20.0	<20.0	838	**3,100**	**45000**	**78800**
	3/20/2018	521	6,600	228	8,640	--	--	--	--	**2,650**	**40200**	**60400**
	12/5/2018	491	7,440	265	9,660	983	<20.0	<20	983	**3,240**	**54000**	**84400**
	4/25/2019	463	8,130	277	11,000	1,440	<10.0	<10.0	1,440	**3,700**	**54,300**	**101,000**
	12/10/2019	533	351	13.2	441	149	<20.0	<20.0	149	245	**3,050**	**5,580**
	4/7/2020	485	6,520	229	8,580	811	<20.0	<20.0	811	**2,840**	**43,800**	**76,400**
	04/27/2021	556	7,070	261	9,130	877	<10.0	<10.0	877	**3,200**	**47,200**	**106,000**
MW-17	5/21/2013	--	--	--	--	--	--	--	--	158	**1,810**	**3,290**
	10/15/2013	612	118	9.29	140	334	<12.5	<12.5	334	170	**1,590**	**2,910**
	5/14/2014	Insufficient Water for Sample Collection										
	10/14/2014	650	144	8.75	140	316	<20.0	<20.0	316	148	**1,670**	**4,310**
	4/21/2015	517	156	7.41	140	328	<20.0	<20.0	328	166	**1,790**	**3,070**
	12/8/2015	497	189	7.42	128	314	<20.0	<20.0	314	133	**1,980**	**3,220**
	4/12/2016	541	165	7.45	124	319	<20.0	<20.0	319	153	**1,990**	**3,210**
	12/13/2016	504	191	7.13	118	306	<20.0	<20.0	306	146	**1,910**	**3,260**

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Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	250	600	1,000
	4/18/2017	531	298	7.28	117	268	<20.0	<20.0	268	275	2630	3510
	10/25/2017	498	361	7.37	103	245	<20.0	<20.0	245	110	2580	6520
	3/20/2018	497	457	8.18	103	--	--	--	--	100	2870	4450
	12/5/2018	457	448	7.08	91	254	<20.0	<20	254	109	2890	4560
	4/26/2019	452	488	7.04	103	257	<10.0	<10.0	257	94	3,050	4,940
	12/10/2019	497	514	7.87	116	246	<20.0	<20.0	246	91	2,770	4,930
	04/07/2020	496	474	8.36	118	253	<20.0	<20.0	253	115	3,230	5,030
	04/27/2021	539	439	7.48	98.8	252	<10.0	<10.0	252	98.5	2,960	4,550
MW-18	5/20/2013	--	--	--	--	--	--	--	--	734	1,610	3,660
	10/15/2013	724	136	4.73	69.4	121	<12.5	<12.5	121	606	1,470	3,130
	5/13/2014	763	140	5.18	68.6	155	<10.0	<10.0	155	585	1,580	2,490
	10/14/2014	750	138	4.71	56.6	199	<20.0	<20.0	199	408	1,470	3,850
	4/21/2015	679	151	4.70	78.1	131	<20.0	<20.0	131	691	1,550	3,830
	12/8/2015	638	137	4.34	57.2	202	<20.0	<20.0	202	385	1,720	3,100
	4/12/2016	654	131	4.46	62.7	159	<20.0	<20.0	159	584	1,690	3,630
	12/13/2016	669	137	4.46	72.2	140	<20.0	<20.0	140	617	1,530	4,190
	4/19/2017	729	143	4.45	70.5	154	<20.0	<20.0	154	644	1750	3580
	10/25/2017	676	133	4.51	59.7	158	<20.0	<20.0	158	429	1590	3220
	3/21/2018	866	167	5.12	102.0	--	--	--	--	576	1590	3190
	12/5/2018	701	131	4.42	58.7	184	<20.0	<20	184	578	1660	3160
	4/26/2019	No Sample Collected										
	12/10/2019	719	141	4.61	69.5	197	<20.0	<20.0	197	658	1,490	3,500
	04/07/2020	678	125	4.36	55.1	130	<20.0	<20.0	130	461	1,430	3,150
	04/27/2021	832	134	5.18	68.8	250	<10.0	<10.0	250	651	1,540	3,330
MW-20	5/20/2013	LNAPL Present, No Sample Collected										
	10/15/2013	LNAPL Present, No Sample Collected										
	5/13/2014	LNAPL Present, No Sample Collected										
	10/15/2014	666	130	10.50	274	624	<10	<10	624	196	1,680	3,830
	4/22/2015	537	138	5.07	279	558	<20.0	<20.0	558	165	1,900	3,470

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NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	**250**	**600**	**1,000**
	12/8/2015	556	137	5.23	270	553	<20.0	<20.0	553	136	**2,020**	**3,280**
	4/12/2016	560	129	5.17	261	523	<20.0	<20.0	523	148	**2,150**	**3,750**
	12/14/2016	549	132	5.17	264	519	<20.0	<20.0	519	160	**1,900**	**3,350**
	4/18/2017	592	137	4.97	279	502	<20.0	<20.0	502	150	**1,760**	**3,370**
	10/25/2017	580	130	4.99	268	499	<20.0	<20.0	499	172	**1,850**	**3,500**
	3/20/2018	646	155	6.11	319	--	--	--	--	144	**2,050**	**3,550**
	12/5/2018	572	133	10.40	244	181	<20.0	<20	181	191	**2320**	**3780**
	4/26/2019	539	138	5.58	290	282	<10.0	<10.0	282	152	**2,100**	**3,780**
	12/11/2019	576	145	10.7	237	369	<20.0	<20.0	369	183	**1,990**	**3,650**
	04/08/2020	616	115	10.7	208	443	<20.0	<20.0	443	160	**1,950**	**3,480**
	04/28/2021	642	131	5.57	275	456	<10.0	<10.0	456	159	**1,920**	**3,500**
MW-22	5/23/2013	--	--	--	--	--	--	--	--	76.3	**1,790**	**3,450**
	10/16/2013	652	157	4.84	63.7	578	<12.5	<12.5	578	72.9	**1,630**	**3,120**
	5/15/2014	692	179	5.20	71	637	<10.0	<10.0	637	54.6	**1,870**	**2,060**
	10/15/2014	707	195	5.07	72.2	626	<10.0	<10.0	626	57.7	**1,580**	**3,640**
	4/22/2015	564	178	4.06	52.7	563	<20.0	<20.0	563	43.4	**1,750**	**3,280**
	12/9/2015	605	185	4.11	56.4	611	<20.0	<20.0	611	68.4	**1,650**	**3,310**
	4/13/2016	603	189	3.65	75.7	693	<20.0	<20.0	693	83.4	**2,010**	**4,160**
	12/13/2016	579	174	3.96	63.7	585	<20.0	<20.0	585	70.6	**1,660**	**3,320**
	4/18/2017	611	177	3.69	63.4	559	<20.0	<20.0	559	60.8	**1,720**	**3,290**
	10/25/2017	632	179	3.80	63.1	567	<20.0	<20.0	567	56.8	170	**3,450**
	3/20/2018	697	215	4.36	74.5	--	--	--	--	65.7	**1,840**	**3,580**
	12/5/2018	633	195	4.27	64	594	<20.0	<20	594	63.3	**1860**	**3470**
	4/25/2019	594	208	4.28	66.6	550	<10.0	<10.0	550	65	**1870**	**3,840**
	12/11/2019	611	230	4.83	70.7	549	<20.0	<20.0	549	106	**1,930**	**3,740**
	04/08/2020	621	217	5.39	63.9	572	<20.0	<20.0	572	75.2	**2,080**	**3,630**
	04/27/2021	Insufficient Water for Sample Collection										
MW-23	5/21/2013	--	--	--	--	--	--	--	--	**326**	**1,750**	**3,700**
	10/16/2013	591	129	6.36	169	548	<50.0	<50.0	548	**333**	**1,630**	**3,070**

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Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	250	600	1,000
	5/13/2014	650	138	7.38	191	454	<10.0	<10.0	545	262	1,780	2,520
	10/14/2014	743	167	8.46	210	622	<10.0	<10.0	622	237	1,610	4,070
	4/21/2015	565	163	7.00	205	577	<20.0	<20.0	577	245	1,780	7,420
	12/8/2015	586	138	6.78	178	499	<20.0	<20.0	499	198	1,840	2,410
	4/12/2016	630	134	6.85	178	538	<10.0	<10.0	538	219	1,840	3,350
	12/13/2016	564	128	6.80	160	541	<20	<20	541	246	1,690	3,300
	4/19/2017	627	142	6.40	181	531	<20	<20	531	206	1600	3170
	10/26/2017	664	160	6.9	169	653	<20.0	<20.0	653	225	1790	3930
	3/20/2018	757	157	7.7	186	--	--	--	--	180	1720	3700
	12/5/2018	628	151	7	160	489	<20.0	<20	489	179	1940	3490
	4/26/2019	621	174	7.85	169	436	<10.0	<10.0	436	169	2,080	3,880
	12/10/2019	LNAPL Present, No Sample Collected										
	04/07/2020	654	190	8.98	158	563	<20.0	<20.0	563	183	2,040	3,840
	04/26/2021	LNAPL Present, No Sample Collected										
MW-24	5/21/2013	No Sample Collected										
	10/16/2013	No Sample Collected										
	5/13/2014	Insufficient Water for Sample Collection										
	10/14/2014	682	405	7.21	78.6	781	<10.0	<10.0	781	79.2	2,080	4,740
	4/23/2015	592	304	3.8	83.4	1,370	<20.0	<20.0	1,370	90.1	2,050	3,440
	12/8/2015	578	293	3.61	73.7	817	<20.0	<20.0	817	84.9	2,100	2,960
	4/12/2016	598	280	3.77	72	805	<20.0	<20.0	805	88.7	2,110	3,720
	12/13/2016	586	280	3.82	69.2	776	<20.0	<20.0	776	92.3	1,910	3,960
	4/19/2017	589	306	4.37	86.3	731	<20.0	<20.0	731	107	2020	3770
	10/26/2017	649	291	3.78	81.1	803	<20.0	<20.0	803	89.2	2060	4010
	3/20/2018	668	291	2.90	86.0	--	--	--	--	84	1760	3990
	12/5/2018	580	270	2.73	87.4	987	<20.0	<20	987	93	1820	3670
	4/26/2019	No Sample Collected										
	12/10/2019	618	309	3.93	82.0	781	<20.0	<20.0	298	103	2,050	4,000
	04/07/2020	649	314	3.51	80.9	857	<20.0	<20.0	857	92.6	2,080	4,190
	04/27/2021	575	751	8.29	82.7	702	<10.0	<10.0	702	87.0	3,650	6,220

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NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	250	600	1,000	
EB-02	5/20/2013	--	--	--	--	--	--	--	--	124	2,140	3,680
	10/15/2013	550	263	10.3	151	336	<12.5	<12.5	336	108	2,200	3,340
	5/13/2014	582	262	12	159	344	<10.0	<10.0	344	105	2,400	2,600
	10/14/2014	596	298	10.8	166	335	<20.0	<20.0	335	102	2,100	4,210
	4/21/2015	494	259	10.4	170	345	<20.0	<20.0	345	108	2,250	4,190
	12/8/2015	498	293	9.57	157	302	<20.0	<20.0	302	83.5	2,850	3,990
	4/12/2016	507	254	10.4	161	332	<20.0	<20.0	332	100	2,420	3,810
	12/13/2016	481	313	9.19	150	300	<20.0	<20.0	300	98.4	2620	4290
	4/19/2017	559	257	11.4	184	313	<20.0	<20.0	313	117	2560	3990
	10/25/2017	541	285	9.87	164	290	<20.0	<20.0	290	97.7	2430	4120
	3/20/2018	594	338	10.9	183	--	--	--	--	106	2530	4020
	12/5/2018	522	308	9	156	298	<20.0	<20.0	298	99	2430	3960
	4/26/2019	511	314	9.14	163	286	<10.0	<10.0	286	104	2,390	4,110
	12/11/2019	528	288	10.2	177	286	<20.0	<20.0	286	140	2,360	4,220
	04/07/2020	537	294	9.79	161	284	<20.0	<20.0	284	110	2,590	4,040
	04/27/2021	572	298	9.81	161	281	<10.0	<10.0	281	114	2,440	4,130
EB-07	5/20/2013	--	--	--	--	--	--	--	--	140	1,910	3,510
	10/15/2013	Insufficient Water for Sample Collection										
	5/13/2014	Insufficient Water for Sample Collection										
	10/14/2014	733	111	4.28	147	379	<20.0	<20.0	379	234	1,630	3,640
	4/21/2015	574	117	3.57	123	365	<20.0	<20.0	365	209	1,690	3,480
	12/8/2015	Insufficient Water for Sample Collection										
	4/12/2016	Insufficient Water for Sample Collection										
	12/13/2016	564.0	109	3.18	95.6	254.0	<20	<20	254.0	184	1,630	3,480
	4/19/2017	594	117	3.03	102	231	<20.0	<20.0	231	148	1,660	2,850
	10/26/2017	601	128	3.34	97	231	<20.0	<20.0	231	159	1,720	3,120
	3/21/2018	629	126	3.24	101	--	--	--	--	132	1,740	2,970
	4/26/2019	549	173	3.50	97.5	259	<10.0	<10.0	259	158	1,890	3,820
	12/10/2019	Insufficient Water for Sample Collection										

Table 4
AP-112
Groundwater General Inorganics Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	--	**250**	**600**	**1,000**
	04/07/2020	Insufficient Water for Sample Collection										
	04/26/2021	Dry										
P-02	5/21/2013	--	--	--	--	--	--	--	--	75.4	**2,020**	**3,540**
	10/16/2013	584	202	5.22	43.8	429	<12.5	<12.5	429	60.4	**1,750**	**2,880**
	5/15/2014	628	235	4.41	50.3	585	<10.0	<10.0	585	109	**1,890**	**2,300**
	10/14/2014	652	203	5.43	38.2	474	<20.0	<20.0	474	45.2	**1,730**	**3,670**
	4/21/2015	549	203	4.60	40.3	458	<20.0	<20.0	458	67.8	**1,860**	**3,360**
	12/8/2015	567	189	4.47	43.6	395	<20.0	<20.0	395	74.2	**1,930**	**3,030**
	4/12/2016	540	184	4.26	45.1	350	<20.0	<20.0	350	94	**2,090**	**3,420**
	12/13/2016	570	212	4.53	58.1	348	<20.0	<20.0	348	96.2	**1,850**	**3,340**
	4/19/2017	563	215	4.20	58.1	322	<20.0	<20.0	322	70.5	**1950**	**2,990**
	10/26/2017	584	227	4.62	61.5	342	<20.0	<20.0	342	82.1	**2050**	**3,790**
	3/20/2018	627	282	4.72	74.9	--	--	--	--	84.3	**2150**	**3,770**
	12/5/2018	556	248	4.96	60.4	396	<20.0	<20	396	80.2	**2020**	**3550**
	4/26/2019	546	254	4.58	62.1	369	<10.0	<10.0	369	77	**2,110**	**3,640**
	12/10/2019	584	212	4.73	53.9	373	<20.0	<20.0	373	111	**1,810**	**3,490**
	04/07/2020	581	232	4.67	59.2	384	<20.0	<20.0	384	86	**2,350**	**3,620**
	04/27/2021	638	237	4.87	60.0	412	<10.0	<10.0	412	75	**2,030**	**3,440**
P-05	5/21/2013	Insufficient Water for Sample Collection										
	10/16/2013	Insufficient Water for Sample Collection										
	5/13/2014	Insufficient Water for Sample Collection										
	10/14/2014	Insufficient Water for Sample Collection										
	4/21/2015	Insufficient Water for Sample Collection										
	12/8/2015	Insufficient Water for Sample Collection										
	4/12/2016	Insufficient Water for Sample Collection										
	12/13/2016	Insufficient Water for Sample Collection										
	4/19/2017	Dry										
	10/26/2017	Dry										
	3/20/2018	Dry										

Table 4
AP-112
Groundwater General Inorganics Analytical Data Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Well	Collection Date	Calcium	Magnesium	Potassium	Sodium	Alkalinity, Bicarbonate	Alkalinity, Carbonate	Alkalinity, Hydroxide	Alkalinity, Total	Chloride	Sulfate	Total Dissolved Solids
NMWQCC Standard (mg/L)	--	--	--	--	--	--	--	--	**250**	**600**	**1,000**
	12/5/2018						Dry					
	4/26/2019						Dry					
	12/10/2019						Dry					
	04/07/2020						Dry					
	04/26/2021						Dry					
QA/QC												
Dup-1 (MW-08)	4/7/2020	540	135	9.13	288	430	<20.0	<20.0	430	514	**1,410**	**3,350**
Dup-2 (MW-22)	04/08/2020	629	220	5.38	63.6	562	<20.0	<20.0	562	73.1	**2,030**	3,560
Dup-1 (EB-02)	09/22/2020											
Dup-2(MW-22)	09/22/2020											
Dup-1 (EB-02)	04/27/2021	582	299	9.83	161	275	<10.0	<10.0	275	112	2,460	4,270
Dup-2 (MW-08)	04/28/2021											
Dup-3 (MW-12)	04/28/2021											

Notes: Analysis performed by DHL Analytical, Round Rock, Texas
Alkalinity analyzed b EPA Method 310.0
Anions analyzed via EPA Method 300 by DHL Analytical Inc., Round Rock, Texas
TDS analyzed by EPA Method 160.1
All values reported in milligrams per liter (mg/L) equivelent to parts per million (ppm)
< - Indicates analyte concentration is less than method detection limit (MDL)
Blue and bold indicates analyte concentration exceeds Water Quality Control Commission (WQCC) domestic water water quality standard
P-05 Well for sample collection under modified program (October 23, 2017)

Table 5
AP-112
EcoVac Vapor and Liquid Recovery Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Date	Vapor (Lbs)	Vapor (Gal)	Liquid (Gal)	Total Hydocarobons (Gal)	Water (Gal)	Well 1	Well 2	Well 3	Well 4
8/5/2019	89	14.6	0	14.6	408	MW-02-09	MW-02-13		
8/6/2019	227	37.5	90	127.5	111	MW-02-13	MW-06		
8/7/2019	248	40.9	20	60.9	118	MW-06			
8/8/2019	110	18.1	0	18.1	29	MW-10			
8/9/2019	115	19	0	19	125	MW-02-13	MW-06		
8/10/2019	17	2.8	30	32.8	69	MW-02-13	MW-14		
9/4/2019	99	16.4	41	57.4	110	MW-10	MW-02-13		
9/5/2019	123	20.2	20	40.2	432	MW-06	MW-02-09		
9/6/2019	75	12.4	20	32.4	266	MW-06	MW-03-04	MW-02-14	
9/7/2019	115	19	10	29	78	MW-02-15			
9/9/2019	45	7.4	21	28.4	21	MW-14	EB-03	EB-08	MW-10
9/10/2019	6	1.1	38	39.1	304	MW-02-16	MW-02-13		
9/11/2019	60	9.9	6	15.9	148	MW-06			
9/12/2019	97	16.1	24	40.1	69	MW-10			
9/13/2019	94	15.6	21	36.6	405	MW-06	MW-02-09		
9/14/2019	67	11	0	11	20	MW-02-06			
10/8/2019	33	5.4	26	31.4	836	MW-02-09	MW-02-13		
10/9/2019	60	9.8	28	37.8	395	MW-10	MW-02-09	MW-02-15	
10/10/2019	6	1.1	15	16.1	201	EB-08	MW-02-13	MW-14	
10/11/2019	30	4.9	10	14.9	750	MW-02-13	MW-06		
10/12/2019	24	4	27	31	100	MW-14	EB-03	EB-08	MW-10
10/14/2019	26	4.3	16	20.3	787	MW-06	MW-02-09		
10/15/2019	11	1.7	10	11.7	579	EB-08	MW-02-09	MW-02-15	
12/3/2019	25	4.1	46	50.1	290	MW-02-13	MW-06		
12/4/2019	153	25.3	16	41.3	125	MW-21			
12/5/2019	17	2.8	29	31.8	304	EB-08	MW-02-09	MW-02-15	
12/6/2019	94	15.6	12	27.6	151	MW-21			
12/7/2019	17	2.8	16	18.8	353	MW-02-13	MW-06		
12/8/2019	66	10.8	12	22.8	49	EB-08	MW-21		
1/7/2020	201	33.2	24	57.2	530	MW-02-13	MW-06		

Table 5
AP-112
EcoVac Vapor and Liquid Recovery Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Date	Vapor (Lbs)	Vapor (Gal)	Liquid (Gal)	Total Hydocarobons (Gal)	Water (Gal)	Well 1	Well 2	Well 3	Well 4
1/8/2020	127	20.9	15	35.9	633	MW-02-15	MW-21		
1/9/2020	141	23.2	16	39.2	276	MW-02-12	MW-21		
1/10/2020	178	29.3	14	43.3	11	MW-04			
1/11/2020	10	1.7	10	11.7	311	MW-14	EB-03	MW-03-03	
1/13/2020	198	32.6	0	32.6	19	MW-04			
1/14/2020	53	8.5	0	8.5	178	MW-23			
1/15/2020	177	29.2	8	37.2	149	MW-02-10	MW-02-15		
1/16/2020	65	10.7	18	28.7	1002	MW-02-09	MW-02-13		
1/17/2020	76	12.5	0	12.5	174	MW-02-12	MW-21		
1/18/2020	78	12.9	0	12.9	17	MW-02-10	MW-02-11	MW-04	
1/20/2020	71	11.7	0	11.7	235	MW-23			
3/24/2020	39	6.5	15	21.5	524	MW-23			
3/25/2020	42	6.9	10	16.9	217	MW-02-12	MW-21		
3/26/2020	5.5	0.9	30	30.9	310	MW-02-10	MW-02-15		
3/27/2020	10	1.7	49	50.7	1592	MW-02-09			
3/28/2020	14	2.4	20	22.4	409	MW-02-13	MW-06		
3/30/2020	2.6	0.4	10	10.4	80	EB-08	MW-14	MW-23	
3/31/2020	4.2	0.7	15	15.7	177	MW-02-10	MW-21		
5/12/2020	36.8	6.1	10	16.1	181	MW-02-10	MW-21		
5/13/2020	30.1	5	0	5	238	MW-02-15	MW-21		
5/14/2020	18.1	3	15	18	1068	MW-02-09	MW-02-13		
5/15/2020	13.7	2.3	0	2.3	96	EB-08	MW-14	MW-23	
5/16/2020	36.2	6	10	16	183	MW-02-10	MW-21		
5/17/2020	21.7	3.6	10	13.6	257	MW-03-03	MW-10	AS-1	
5/18/2020	4.8	0.8	5	5.8	240	MW-02-13	MW-06		
6/16/2020	76.6	12.6	20	32.6	284	MW-02-12	MW-21		
6/17/2020	41.9	6.9	5	11.9	280	MW-21	MW-02-12	MW-10	AS-1
6/18/2020	58.3	9.6	0	9.6	222	MW-10	AS-1	MW-11	MW-03-01
6/19/2020	28.8	4.7	0	4.7	207	MW-11	MW-03-01	MW-09	MW-02-14
6/20/2020	15.9	2.6	0	2.6	213	MW-02-15	MW-06	MW-02-13	

Table 5
AP-112
EcoVac Vapor and Liquid Recovery Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Date	Vapor (Lbs)	Vapor (Gal)	Liquid (Gal)	Total Hydocarobons (Gal)	Water (Gal)	Well 1	Well 2	Well 3	Well 4
6/21/2020	306.7	50.6	0	50.6	125	MW-02-10	MW-02-11	MW-04	
6/22/2020	7	1.2	0	1.2	287	MW-13	MW-23	EB-08	MW-14
6/23/2020	36.2	6	0	6	484	MW-03	MW-03-04	MW-22	MW-03-03
6/24/2020	57.3	9.5	0	9.5	519	MW-02-16	MW-03-02	MW-02-09	MW-02-10
6/25/2020	142.2	23.5	0	23.5	50	MW-03	MW-02-06	MW-02-11	
10/10/2020	93	15.3	0	15.3	45	MW-03			
10/11/2020	87.7	14.5	0	14.5	112	MW-02-10	MW-02-11	MW-04	
10/12/2020	89.5	14.8	20	34.8	127	MW-02-16	MW-21	MW-02-12	
10/13/2020	49.8	8.2	110	118.2	240	MW-03-02	MW-02-13	MW-06	
10/14/2020	37.2	6.1	0	6.1	188	MW-02-09	MW-10		
12/1/2020	124.6	20.6	16	36.6	9	MW-03	MW-02-11		
12/2/2020	401.3	66.2	0	66.2	0	MW-02-11			
12/3/2020	157.8	26	25	51	124	MW-02-10	MW-04	MW-21	MW-02-12
12/4/2020	18.3	3	5	8	133	MW-02-15	MW-06	MW-02-13	
12/5/2020	141.2	23.3	0	23.3	0	MW-10			
2/2/2021	611	100	0	100	0	MW-02-11			
2/3/2021	431.7	71.2	0	71.2	0	MW-02-11			
2/4/2021	587.4	101.9	5	106.9	69	MW-02-10	MW-04		
2/5/2021	125.1	20.6	44	64.6	101	EB-08	MW-23	MW-21	MW-02-12
2/6/2021	84.8	14	0	14	0	MW-10			
4/19/2021	256.9	42.4	0	42.4	0	MW-02-11			
4/20/2021	453.1	74.8	0	74.8	0	MW-02-11			
4/21/2021	263.5	43.5	0	43.5	0	MW-02-11			
4/22/2021	140.3	23.2	0	23.2	0	MW-02-10	MW-04		
4/23/2021	221.2	36.5	0	36.5	3	MW-10			
6/15/2021	98.5	16.3	10	26.3	334	MW-03-03	MW-02-15		
6/16/2021	137.4	22.7	10	32.7	188	MW-03	MW-03-02		
6/17/2021	139.3	23	15	38	382	MW-02-12	MW-21	MW-02-09	
6/18/2021	105.2	17.4	0	17.4	174	MW-02-14	MW-02-06	MW-21	
6/19/2021	80.8	13.3	5	18.3	48	EB-03	MW-14	EB-08	

Table 5
AP-112
EcoVac Vapor and Liquid Recovery Summary
Empire Abo Gas Plant, Eddy County, New Mexico

Date	Vapor (Lbs)	Vapor (Gal)	Liquid (Gal)	Total Hydocarobons (Gal)	Water (Gal)	Well 1	Well 2	Well 3	Well 4
1/4/2022	480.1	79.2		79.2	68	MW-21			
1/5/2022	756.9	124.9		124.9	361	MW-21	MW-02-12		
1/6/2022	704.1	116.2		116.2	257	MW-21	MW-02-12		
1/7/2022	720.5	118.9	260	378.9	384	MW-21	MW-02-12		
1/8/2022	70.7	11.7	25	36.7	136	MW-02-15	MW-14		
Totals:	**12242.5**	**2024.2**	**1483**	**3507.2**	**22894**				

Table 6
AP-112
LNAPL Thickness of Select Monitoring Wells

Date	AS-01	EB-03	EB-08	MW-02-06	MW-02-09	MW-02-10	MW-02-11	MW-02-12	MW-02-13	MW-02-14	MW-02-15	MW-02-16	MW-03	MW-03-01	MW-03-02	MW-03-03	MW-03-04	MW-04	MW-06	MW-07	MW-09	MW-10	MW-11	MW-13	MW-14	MW-19	MW-20	MW-21	MW-23
02/12/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
02/13/2007	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.94	--	--	--	--	--	--	--	--	--
03/26/2007	--	0.31	--	--	--	--	--	0.40	--	--	--	--	--	--	--	0.01	0.13	--	--	--	--	--	--	--	--	--	--	--	--
03/27/2007	--	--	--	--	3.57	10.52	--	--	0.98	0.38	--	--	--	--	--	--	--	--	1.35	--	0.37	--	--	--	--	--	--	--	--
06/18/2007	--	0.14	--	--	0.17	5.64	1.25	**	3.15	0.45	--	--	0.49	--	--	--	0.83	1.05	0.17	--	0.28	--	--	--	--	--	--	--	--
09/17/2007	--	0.35	--	--	3.06	6.28	1.20	**	3.13	0.49	--	--	1.07	--	**	--	1.16	*	0.07	--	0.49	--	--	--	--	--	--	--	--
12/10/2007	--	0.39	--	--	3.40	5.04	0.51	**	3.10	0.66	--	--	1.18	--	--	--	0.91	1.96	0.19	--	**	--	--	--	--	--	--	--	--
03/10/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
03/11/2008	--	2.52	--	--	0.82	1.92	3.00	**	2.21	0.48	--	--	2.64	--	**	--	0.97	2.37	0.91	--	1.63	--	--	--	--	--	--	--	--
07/31/2008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25.42	18.88	--	--	--	--	--	--
09/15/2008	--	0.43	--	--	8.83	8.78	0.55	**	Sheen	0.56	--	--	3.05	15.49	**	0.01	0.79	5.09	13.39	0.11	0.23	0.66	19.27	--	0.29	--	--	--	--
03/09/2009	--	0.94	--	--	3.89	8.30	**	**	3.17	0.28	--	--	2.67	10.69	**	Sheen	0.82	4.65	7.34	0.30	0.06	16.86	14.86	--	1.65	--	--	--	--
07/13/2009	--	--	--	--	--	--	--	--	--	--	--	--	--	11.16	--	--	--	--	--	Sheen	--	--	--	--	1.19	--	--	--	--
07/14/2009	--	1.67	--	--	--	8.78	--	**	--	--	--	--	--	--	**	--	0.83	5.80	--	--	0.09	5.61	15.40	--	--	5.35	17.29	0.20	--
09/14/2009	--	1.92	--	--	11.42	9.10	0.65	0.15	9.33	--	--	--	3.00	11.10	**	0.02	0.79	9.40	11.50	*	0.12	20.74	0.82	--	0.75	7.45	--	0.40	0.16
03/29/2010	--	3.02	--	0.23	3.11	5.11	0.63	0.10	3.64	1.15	--	--	3.17	4.31	0.19	0.19	0.77	0.19	10.23	0.44	0.25	10.60	7.91	--	0.01	4.10	0.36	8.62	0.18
09/13/2010	--	0.64	--	1.80	2.22	3.25	0.75	0.01	5.63	0.95	--	--	4.22	2.24	0.03	0.02	1.56	1.97	9.30	0.02	**	8.46	4.83	--	0.14	6.42	0.48	4.89	--
03/14/2011	--	--	--	0.51	--	--	0.49	--	--	--	--	--	--	--	0.04	0.01	--	--	--	0.01	0.22	--	--	--	--	--	--	--	--
03/15/2011	--	0.65	0.02	--	--	--	--	--	3.95	0.62	--	--	1.93	1.88	--	--	1.56	1.73	6.67	--	--	7.92	4.14	0.01	0.15	7.5	0.50	2.29	--
03/16/2011	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/11/2011	--	--	--	0.42	--	--	--	--	5.27	--	--	--	2.37	1.60	0.04	--	1.53	2.92	10.07	--	0.62	--	--	--	--	--	--	--	--
05/30/2012	--	--	2.45	0.25	2.95	7.38	0.11	--	6.33	0.62	--	--	0.38	1.68	0.10	--	0.52	0.45	8.87	--	0.32	8.15	2.50	--	--	4.14	0.52	1.07	--
09/24/2012	--	0.15	4.11	0.13	3.31	7.27	0.08	0.02	4.13	0.85	--	--	0.21	1.18	0.63	0.02	0.08	0.09	6.86	--	0.37	5.48	--	--	--				--
09/25/2012	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.17	--	--	3.02	0.50	1.09	--
05/20/2013	--	0.04	2.40	0.05	4.45	10.00	0.12	--	3.62	0.88	--	--	--	--	0.35	--	0.30	0.07	3.82	--	--	6.05	--	--	0.02	4.05	0.03	1.00	--
10/14/2013	--	--	2.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
10/15/2013	--	--	--	0.45	3.15	6.30	0.05	--	3.58	0.70	--	--	--	0.60	3.20	--	0.40	0.20	5.12	--	0.30	4.45	--	--	--	4.1	0.05	1.20	--
05/14/2014	--	0.04	2.35	0.35	4.55	4.55	0.05	--	1.47	0.60	--	--	0.02	1.50	0.60	--	0.90	0.50	2.30	--	0.82	1.60	0.68	7.54	0.05	10.55	0.50	1.27	--
10/13/2014	--	--	2.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.00	--	--	--	--
10/14/2014	--	--	--	0.45	4.08	8.18	0.06	--	5.85	1.90	--	--	--	0.08	0.80	--	0.45	0.25	4.10	--	2.05	3.70	0.20	--	--	3.6	--	1.12	--
04/20/2015	--	--	1.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
04/21/2015	--	--	--	0.30	3.88	5.65	--	--	1.80	0.75	--	--	--	0.55	0.20	--	0.20	0.65	2.10	--	2.10	2.90	0.38	--	--	6.45	--	1.05	--
12/04/2015	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Sheen	--	--	--	--
12/07/2015	--	0.80	1.10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5.64	--	3.1	Sheen	1.00	--
12/08/2015	--	--	--	--	2.20	5.85	--	--	2.15	0.35	--	--	--	1.34	0.45	--	0.25	0.65	3.40	--	0.75	4.30	0.58	--	--	--	--	--	--
04/11/2016	--	1.1	1.09	--	1.46	5.43	--	--	2.35	0.42	--	--	--	0.22	0.35	--	0.35	0.78	2.93	--	1.19	7.81	0.03	--	--	2.42	--	1.12	--
12/12/2016	--	0.40	1.20	0.01	--	4.00	--	--	--	--	--	0.74	--	--	0.68	--	0.65	0.79	--	--				--	--	--	--	1.61	--
12/13/2016	--	--	--	--	2.95	--	--	--	1.72	0.59	0.10	--	--	0.10		--	--		2.53	--	1.46	2.21	Sheen	--	--	2.22	--	--	--
04/17/2017	--	0.50	1.12	0.01	2.80	2.92	--	--	1.85	0.50	0.28	1.63	--	0.10	0.98	--	2.02	0.88	2.45	--	1.42	2.09	0.15	Dry	0.16	2.41	--	1.18	--
10/24/2017	--	0.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	Dry	0.11	--	--	--	--
10/25/2017	--	--	--	0.48	2.98	1.55	--	--	0.76	0.48	0.20	1.74	--	0.25	0.24	--	1.68	0.77	1.24	--	1.79	1.93	--	--	--	1.45	--	1.60	--
11/17/2017	0.04	0.13	--	--	0.22	1.35	--	--	0.90	0.05	0.05	0.02	--	0.03	--	--	Sheen	0.06	0.13	--	0.84	0.23	--	--	--	0.07	--	--	--
12/08/2017	0.11	0.05	0.01	--	0.29	1.95	--	--	0.07	0.03	0.31	0.01	--	0.07	--	--	--	Dry	0.01	--	1.54	--	--	Dry	0.12	0.13	--	0.01	--
03/13/2018	--	0.38	0.47	0.41	2.77	0.06	0.30	--	1.20	0.14	3.07	0.24	0.41	1.53	--	--	--	Dry	1.33	--	1.60	0.68	--	--	0.22	0.29	--	2.80	--
03/19/2018	--	--	--	--	0.86	0.07	0.52	--	0.52	0.08	2.60	0.20	--	0.27	--	--	--	Dry	1.39	--	1.68	0.24	--	Dry	--	0.21	--	0.35	--
08/05/2018	5.29	--	--	--	--	--	--	--	--	0.78	--	--	--	1.65	--	--	--	--	--	--	3.60	2.83	--	--	--	--	--	--	--
08/07/2018	--	--	--	--	0.30	--	--	--	0.30	--	1.70	0.30	--	--	--	--	--	--	0.70	--	--		--	--	--	--	--	--	--
08/23/2018	8.49	0.1	--	0.62	0.66	--	--	--	--	0.57	2.15	0.15	--	1.19	0.03	--	--	--	1.84	--	*	0.95	*	--	0.39	0.14	--	6.10	--
08/29/2018	5.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	*	0.29	*	--	--	--	--	--	--
09/05/2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	*	**	--	--	--	--	--	--	--
09/13/2018	2.79	--	--	--	--	--	--	--	0.47	--	2.25	--	--	*	--	--	--	--	1.30	--	*	--	*	--	--	--	--	--	--
09/18/2019	1.42	--	--	--	0.59	--	--	--	0.45	0.00	2.34	--	--	*	--	--	--	--	1.25	--	0.23	--	*	--	--	--	--	--	--
09/27/2018	1.4	--	--	--	0.00	--	--	--	0.32	0.00	2.95	--	--	--	--	--	--	--	1.44	--	0.22	0.02	*	--	--	--	--	--	--
10/03/2018	1.45	--	--	--	0.32	--	--	--	0.34	0.17	3.10	--	--	--	--	--	--	--	1.4	--	--	--	--	--	--	--	--	--	--
10/09/2018	1.07	--	--	--	0.69	--	--	--	0.42	0.13	3.22	--	--	--	--	--	--	--	1.59	--	--	--	--	--	--	--	--	--	--
10/16/2018	2.69	--	--	--	0.00	--	--	--	0.30	0.79	2.68	--	--	--	--	--	--	--	1.11	--	--	--		--	--	--	--	--	--
11/01/2018	7.98	--	--	--	0.33	--	--	--	0.55	1.38	3.41	--	--	--	--	--	--	--	1.16	--	--	3.09	*	--	--	--	--	--	--
11/02/2018	--	--	--	--	--	--	--	--	--	0.18	--	--	--	--	--	--	--	--		--	--	3.09	--	--	--	--	--	--	--
11/08/2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	3.09	*	--	--	--	--	--	--
11/09/2018	--	--	--	--	0.22	--	--	--	0.59	--	3.49	0.28	--	--	--	--	--	--	1.23	--	--	--	--	--	--	--	--	--	--
11/20/2018	--	--	--	--	--	--	--	--	--	--	0.97	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
11/21/2018	--	--	--	--	0.27	--	--	--	0.73	0.39	--	0.25	--	--	--	--	--	--	1.31	--	--	--	*	--	--	--	--	--	--
11/30/2018	--	--	--	--	0.27	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.09	*	--	--	--	--	--	--
12/03/2018	--	0.01	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Dry	2.22	0.16	--	--	--
12/04/2018	1.85	--	0.85	0.25	0.30	1.30	0.63	8.07	0.19	0.25	4.21	0.12	--	--	0.40	0.40	--	--	1.29	--	0.04	0.02	--	--	--	--	--	9.57	--
12/05/2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/07/2018	--	--	--	--	0.30	--	--	--	--	--	--	--	--	***	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/21/2018	--	--	--	--	--	--	--	--	0.49	0.20	3.81	0.32	--	***	--	--	--	--	1.39	--	*	--	--	--	--	--	--	--	--
12/28/2018	--	--	--	--	--	--	--	--	0.52	0.92	3.85	0.36	--	--	--	--	--	--	1.38	--	*	--	--	--	--	--	--	--	--
01/04/2019	--	--	--	--	--	--	--	--	*	--	4.08	0.26	--	--	--	--	--	--	0.41	--	***	--	--	--	--	--	--	--	--
01/10/2019	--	--	--	--	--	--	--	--	--	--	3.90	--	--	--	--	--	--	--	0.11	--	***	--	--	--		0.16	--	--	--
01/11/2019	--	--	--	--	0.30	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--	--	--	--	--	--	--	--
01/16/2019	--	--	--	--	--	--	--	--	**	--	*	--	--	--	--	--	--	--	0.11	--	***	***	--	--	--	--	--	--	--
01/24/2019	--	--	--	--	--	--	--	--	**	--	*	0.13	--	--	--	0.59	--	--	0.12	--	***		--	--	--	--	--	7.25	--
01/31/2019	--	--	--	--	--	--	--	--	0.31	--	*	0.42	--	--	--	--	--	--	0.27	--	***	***	--	--	--	--	--	--	--
02/06/2019	--	--	--	--	--	--	--	--	**	--		0.24	--	--	--	--	--	--	0.27	--	--	**	--	--	--	--	--	--	--
02/13/2019	--	--	--	--	--	Dry	0.63	--	**	0.07	**	0.26	--	--	--	--	--	**	0.15	--	--	***	--	--	--	--	--	--	--
02/20/2019	0.03	--	--	0.68	--	--	0.76	7.84	**	0.08	--	0.10	--	--	0.01	0.62	--	**	0.11	--	--	**	--	--	--	--	--	6.16	7.39
02/26/2019	--	--	--	--	--	--	--	--	**	0.02	--	--	--	--	--	--	--	--	--	--	--	**	--	--	--	--	--	--	--
03/15/2019	--	--	--	--	0.03	--	--	--	**	**	0.04	--	--	--	--	--	--	--	0.27	--	--	**	Dry	--	--	--	--	--	--
03/22/2019	0.01	--	--	--	0.11	--	0.48	6.35	0.13	**	0.07	--	--	--	--	--	--	--	0.47	--	--	**	Dry	--	--	--	--	--	--
04/23/2019	--	0.44	0.84	0.61	0.23	Dry	0.25	0.07	0.56	--	0.37	0.24	0.02	--	0.46	0.46	--	1.85	0.61	--	--	Dry	--	Dry	1.35	0.16	--	--	0.91
06/21/2019	--	--	--	--	0.4	--	--	--	1.85	0.70	--	--	--	--	--	--	--	--	0.80	--	--	Dry	--	--	--	0.1	--	--	--
06/30/2019	--	--	--	--	--	--	--	--	--	0.20	0.34	--	--	--	--	--	--	--	--	--	--	1.19	Dry	--	--	--	--	--	--
06/30/2019	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.07	--	--	--	--	--	--	--	--
07/24/2019	--	0.49	0.98	1.00	1.17	Dry	Dry	--	1.62	1.17	0.48	0.26	0.2	--	--	--	--	0.35	0.93	--	--	0.09	Dry	--	2.39	--	--	*	*
08/30/2019	--	0.49	1.14	1.08	0.25	--	--	--	0.21	0.05	0.38	0.78	--	--	--	--	0.22	--	0.11	--	--	--	--	--	0.26	0.26	--	0.30	0.02
10/07/2019	--	--	0.46	--	0.7	--	--	--	0.03	0.00	--	Sheen	--	--	Sheen	--	--	--	0.19	--	0.01	Sheen	0.01	--	0.09	--	--	0.92	--

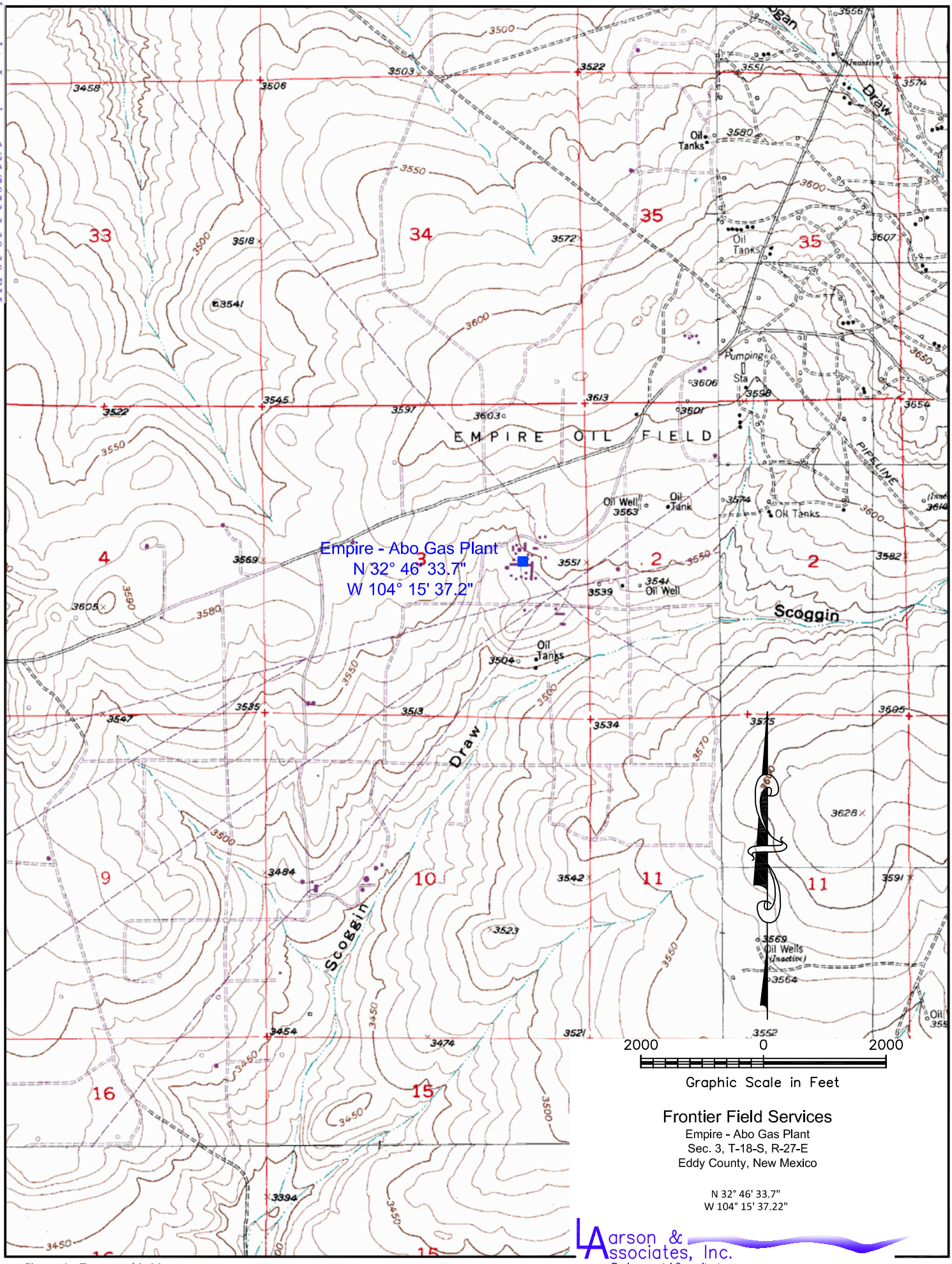
Table 6
AP-112
LNAPL Thickness of Select Monitoring Wells

Date	AS-01	EB-03	EB-08	MW-02-06	MW-02-09	MW-02-10	MW-02-11	MW-02-12	MW-02-13	MW-02-14	MW-02-15	MW-02-16	MW-03	MW-03-01	MW-03-02	MW-03-03	MW-03-04	MW-04	MW-06	MW-07	MW-09	MW-10	MW-11	MW-13	MW-14	MW-19	MW-20	MW-21	MW-23
11/07/2019	--	0.02	0.01	--	0.25	--	--	--	0.36	0.01	0.23	0.01	0.01	--	0.62	--	--	--	0.01	--	--	0.01	Dry	--	6.02	--	--	7.38	0.01
11/22/2019	--	0.01	0.01	0.44	0.13	--	--	0.01	0.02	0.01	0.23	0.01	3.37	--	0.01	--	0.01	--	0.02	--	0.01	0.99	**	--	0.16	--	--	7.83	0.12
12/02/2019	--	Sheen	0.53	--	--	--	--	--	0.45	--	--	--	--	--	--	--	--	--	0.22	--	--	--	Dry	--	0.01	--	--	8.25	0.01
12/09/2019	--	0.08	0.18	--	0.25	Dry	1.46	0.03	0.01	0.01	0.92	--	--	--	0.40	0.40	--	0.26	0.01	--	--	Dry	--	Dry	0.2	--	--	0.27	0.10
01/03/2020	--	0.01	0.28	0.01	0.24	**	0.13	--	0.04	Sheen	0.16	Sheen	Sheen	Sheen	Sheen	0.34	--	0.26	0.11	--	Sheen	Sheen	Dry	--	0.08	Sheen	Sheen	0.64	0.1
02/11/2020	--	Sheen	Sheen	--	0.17	0.81	Dry	--	0.09	Sheen	0.21	Sheen	Sheen	Sheen	Sheen	--	0.01	Dry	0.18	--	Sheen	0.02	--	--	0.03	--	Sheen	0.22	0.07
03/19/2020	--	Sheen	0.2	Sheen	0.21	--	--	--	0.18	Sheen	0.22	Sheen	--	Sheen	--	Sheen	Sheen	Dry	0.97	--	--	***	--	--	0.11	--	--	0.91	0.15
04/16/2020	--	Sheen	0.14	--	0.11	0.46	Dry	--	--	--	0.23	--	--	0.04	--	Sheen	Sheen	Dry	0.13	--	--	***	Dry	--	0.74	--	--	--	Sheen
04/17/2020	--	--	--	--	--	--	--	0.07	0.08	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.26	--
05/01/2020	--	--	0.2	--	0.14	0.81	--	0.05	0.1	Sheen	0.12	--	--	Sheen	--	0.04	--	Dry	0.10	--	--	***	Dry	--	0.03	--	--	0.56	0.01
05/29/2020	--	0.06	0.06	--	0.33	0.21	--	0.22	0.06	--	0.08	--	--	--	--	0.01	--	****	--	--	--	0.02	Dry	--	0.33	--	--	0.1	0.09
06/05/2020	0.57	Sheen	0.03	--	0.19	0.29	--	0.21	0.02	--	Sheen	--	0.01	Sheen	--	Sheen	--	Dry	0.02	--	--	0.01	Dry	Dry	0.01	--	--	0.13	0.06
06/12/2020	0.46	0.04	0.09	--	0.21	0.34	Dry	0.08	0.01	Sheen	0.13	--	--	0.01	--	Sheen	--	Dry	0.04	--	--	0.02	Sheen	Dry	0.01	0.02	--	0.24	0.09
06/26/2020	0.17	--	0.06	--	0.09	0.05	--	Sheen	0.07	Sheen	0.08	--	0.04	--	Sheen	Sheen	--	Sludge	0.01	--	--	0.02	Sludge	Dry	0.01	0.02	--	0.07	0.02
07/10/2020	0.08	Sheen	0.02	--	0.14	0.11	Sludge	Sheen	0.13	Sheen	0.11	--	0.04	--	--	0.01	--	Sludge	0.04	--	Sheen	0.05	Dry	Dry	Sheen	0.02	--	0.17	Sheen
07/17/2020	Sheen	Sheen	Sheen	--	0.11	0.13	Sludge	0.06	0.13	--	0.07	--	0.03	--	--	Sheen	--	Sludge	0.05	--	Sheen	0.10	Dry	Dry	--	0.04	--	0.14	0.02
07/24/2020	0.02	0.05	--	--	0.14	0.17	Dry	0.04	0.13	Sheen	0.13	--	0.06	--	--	0.04	--	Dry	0.14	--	--	0.02	Dry	Dry	0.04	0.01	--	0.26	0.03
07/31/2020	0.05	--	0.05	0.01	0.16	0.19	Sludge	0.04	0.13	--	0.14	--	0.04	--	--	0.05	--	Sludge	0.20	--	--	0.06	Sludge	Dry	0.02	0.02	--	0.30	0.02
08/07/2020	0.05	--	0.01	--	0.11	0.24	Sludge	0.08	0.07	Sheen	0.11	--	0.04	--	0.01	0.08	--	Dry	0.21	--	--	0.13	Dry	Dry	0.01	0.01	--	0.15	0.03
08/14/2020	0.02	--	0.08	--	0.16	0.29	Dry	0.09	0.12	Sheen	0.09	--	0.03	--	--	0.10	--	Sludge	0.22	--	--	0.10	Sludge	Dry	0.02	Sheen	--	0.07	0.04
08/28/2020	Sheen	Sheen	0.12	--	0.18	0.32	Sludge	0.14	0.11	Sheen	0.15	--	0.05	--	--	0.18	--	Dry	0.14	--	Sheen	0.20	Dry	Dry	0.03	0.04	--	0.15	0.06
09/11/2020	Sheen	Sheen	0.11	--	0.18	0.33	Dry	0.17	0.1	Sheen	0.14	--	0.03	--	--	0.15	--	***	0.08	--	--	0.19	Dry	Dry	0.02	0.02	--	0.45	0.02
09/18/2020	Sheen	Sheen	0.12	--	0.18	0.43	Dry	0.19	0.02	0.01	0.13	--	0.02	--	--	0.18	--	Dry	0.11	--	--	0.17	Dry	Dry	0.02	***	--	0.59	0.03
09/21/2020	--	0.02	0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		Dry	Dry	0.15		--	--	--
09/22/2020	2.25	--	--	--	0.25	0.02	Dry	0.22	0.08	--	0.2	Sheen	Sheen	--	--	0.17	--	Dry	0.14	--	--	0.18	Dry	Dry		0.01	--	0.82	0.1
10/02/2020	Sheen	0.06	0.1	--	0.19	Dry	Dry	0.21	0.07	0.01	0.14	--	0.02	--	Sheen	0.22	--	Dry	0.08	--	--	0.16	Dry	Dry	0.02	0.02	--	0.84	0.01
10/23/2020	Dry	0.05	0.25	--	0.08	0.10	Sludge	0.01	0.06	0.02	0.17	--	0.31	--	Sheen	0.07	--	Dry	--	--	--	0.01	Dry	Dry		0.01	--	0.07	0.05
11/06/2020	Sheen	0.04	0.21	--	0.01	0.15	Sludge	0.02	--	0.02	0.19	--	0.29	--	Sheen	0.05	--	Dry	0.01	--	--	0.02	Dry	Dry	0.01	0.01	--	0.11	Sheen
11/20/2020	Dry	0.08	0.33	--	0.09	Dry	Sludge	0.03	--	0.02	0.18	--	0.21	--	0.01	0.05	--	Sludge	0.01	--	--	0.05	Dry	Dry	0.03	0.01	--	0.28	0.05
12/17/2020	Dry	0.1	0.24	--	0.06	Dry	Sludge	0.05	0.04	0.01	0.1	--	0.13	--	Sheen	0.06	--	Dry	--	--	--	0.02	Dry	Dry	0.11	Sheen	--	0.02	0.97
01/08/2021	Dry	0.15	0.39	--	0.01	Dry	Dry	0.02	--	0.29	0.12	--	0.09	--	0.01	0.09	--	Dry	0.01	--	--	0.03	Dry	Dry	Sheen	Sheen	--	0.23	0.01
01/22/2021	Dry	0.12	0.24	--	0.09	Dry	Dry	0.01	0.01	0.01	0.14	--	0.11	--	0.01	0.16	--	--	0.01	--	--	0.03	Dry	Dry	0.03	0.01	--	0.31	Sheen
02/22/2021	Dry	0.22	0.15	--	0.12	Dry	Dry	0.03	--	0.01	0.21	--	0.03	--	0.01	0.31	--	--	0.02	--	--	0.01	Dry	Dry	0.03	0.02	--	0.05	0.02
03/08/2021	Dry	0.23	0.15	--	0.13	Dry	Dry	0.01	0.01	0.01	0.23	--	0.15	--	0.01	0.31	--	--	0.01	--	--	0.02	Dry	Dry	0.05	0.02	--	0.01	0.01
03/19/2021	Dry	0.28	0.21	--	0.11	Dry	Dry	0.01	--	0.02	0.26	--	0.02	--	0.02	0.30	--	--	0.01	--	--	0.03	Dry	Dry	0.03	0.02	--	0.07	0.01
04/19/2021	Dry	0.25	0.02	--	0.16	Dry	Dry	0.04	--	0.03	0.32	--	0.11	--	0.02	0.36	--	Dry	0.03	--	--	0.04	Dry	Dry	0.07	0.07	--	0.24	0.03
04/27/2021	Dry	0.25	0.12	--	0.13	Dry	Dry	0.06	0.01	0.05	0.33	Sheen	0.16	--	0.01	0.46	--	Dry	0.02	--	--	--	Dry	Dry	0.06	0.02	--	0.28	0.08
05/27/2021	Dry	0.32	0.20	--	0.19	Dry	Dry	0.17	--	0.25	0.39	Sheen	0.17	--	1.02	0.54	--	Dry	0.03	--	0.02	0.01	Dry	Dry	0.07	0.06	--	0.14	--
07/23/2021	Dry	--	0.06	--	0.28	Dry	Dry	0.37	0.02	--	0.55	--	0.11	--	0.00	0.12	--	--	0.47	--	--	0.03	Dry	Dry	1.03	0.02	--	4.73	0.00
09/29/2021	0.00	--	0.00	--	0.41	Dry	Dry	0.08	0.01	--	0.36	0.04	0.07	Dry	0.36	--	--	0.24	0.25	--	--	0.21	Dry	Dry	0.35	--	--	6.56	0.01
01/4-5/2022	Dry	--	0.11	--	0.00	Dry	Dry	7.02	0.07	--	1.09	--	0.07	--	0.68	--	--	--	0.64	--	--	0.39	Dry	Dry	7.99	--	--	5.18	0.02
01/27-28/2022	Dry	--	0.41	--	0.46	Dry	Dry	0.27	0.06	--	0.15	--	0.08	--	0.63	--	--	--	0.43	--	--	0.33	Dry	Dry	0.22	--	--	0.56	0.04
03/10-11/2022	Dry	--	0.21	--	0.38	Dry	Dry	1.22	0.13	--	--	0.27	0.08	--	0.71	--	--	--	0.02	--	--	0.20	Dry	Dry	0.21	--	--	0.58	0.01

Notes:

--	No reading
*	Extraction
**	Emulsion
***	H2S present - no reading

Figures



Frontier Field Services

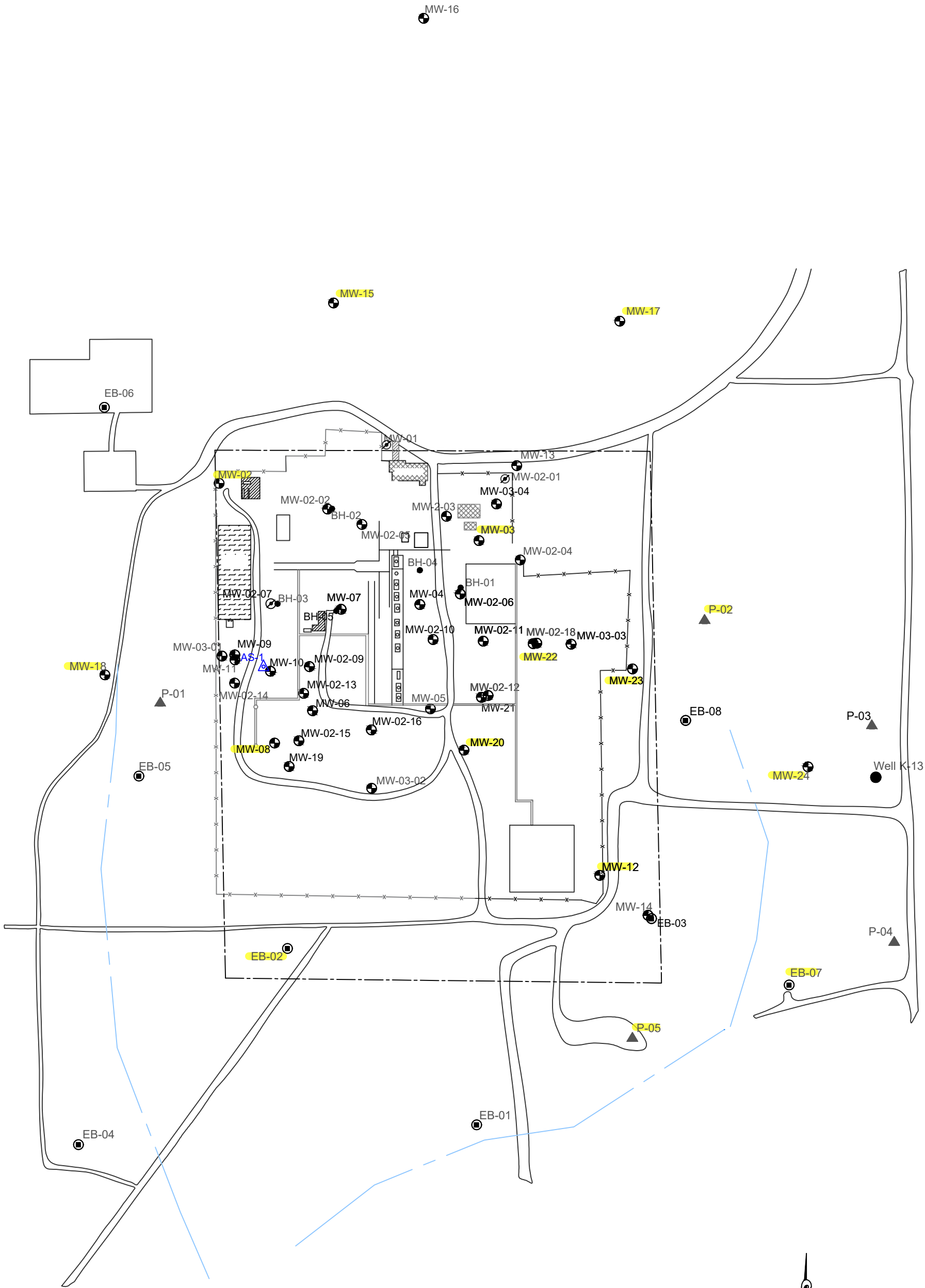
Empire - Abo Gas Plant
Sec. 3, T-18-S, R-27-E
Eddy County, New Mexico

N 32° 46' 33.7"
W 104° 15' 37.22"

Larson & Associates, Inc.
Environmental Consultants

Figure 1 - Topographic Map

Figure 2 - Aerial Map



Legend

MW-10	- Monitoring Well Location and Apparent LNAPL Thickness, Feet
MW-01	- Plugged and Abandoned Monitoring Well
EB-03	- Monitoring Well Location and Apparent LNAPL Thickness, Feet
P-03	- Piezometer (Fluid Level) Location
AS-1	- Test Well Location
MW-03	- Monitoring Well for Groundwater Sampling

Fence

Property Line

Draw

Road

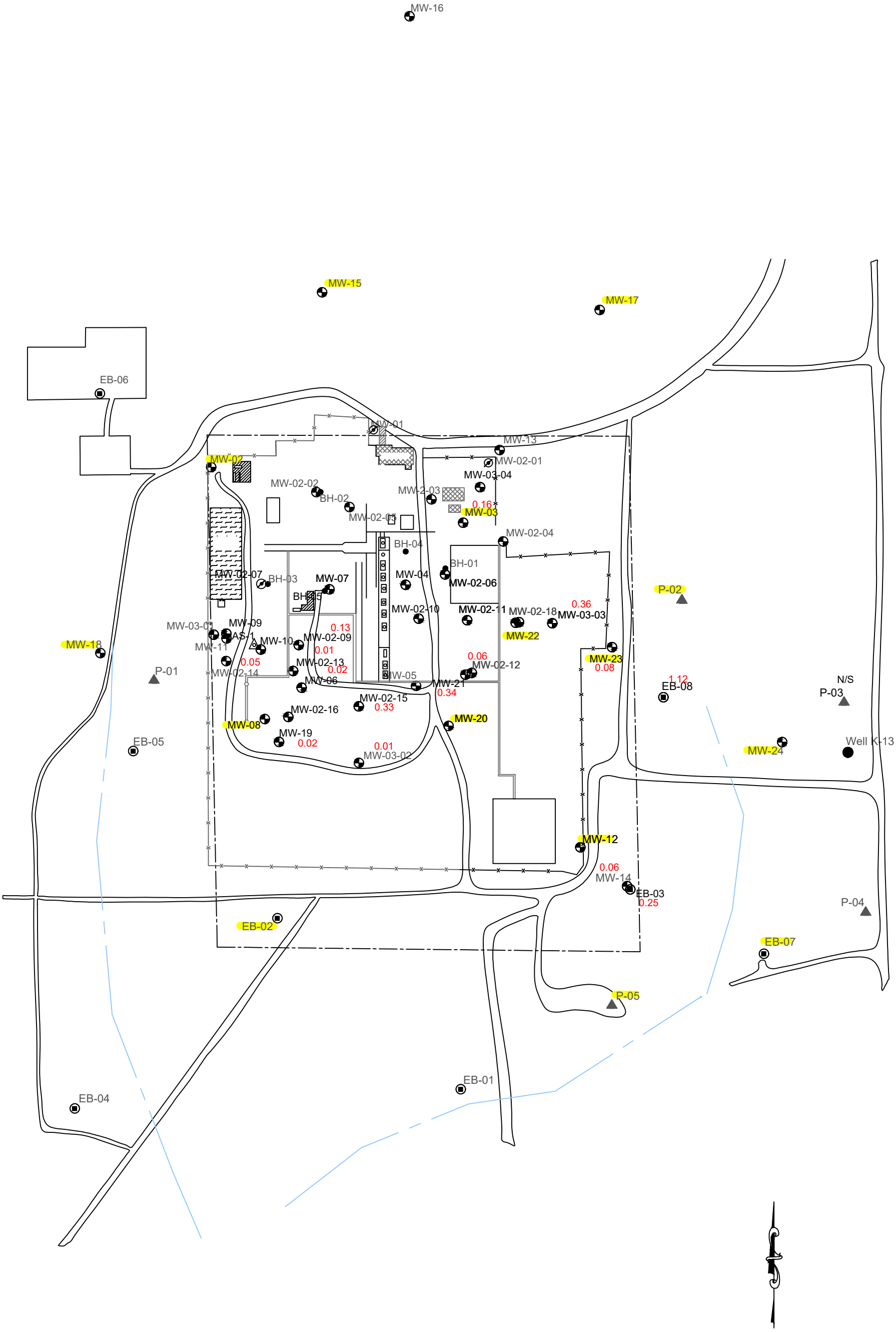
300 0 300

Graphic Scale in Feet

Frontier Field Services, LLC
AP - 112 / Empire - Abo Gas Plant
Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E
Eddy County, New Mexico
32° 46' 33.7"N
104° 15' 37.22"W

Larson & Associates, Inc.
Environmental Consultants

Figure 3 - Facility Drawing



Legend

0.02 MW-06 - Monitoring Well Location and Apparent LNAPL Thickness, Feet, April 26-27, 2021

0.25 MW-01 - Plugged and Abandoned Monitoring Well

EB-03 - Monitoring Well Location and Apparent LNAPL Thickness, Feet, April 26-27, 2021

P-03 - Piezometer (Fluid Level) Location

- Test Well Location

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC.

AP - 112 / Empire - Abo Compressor Station

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

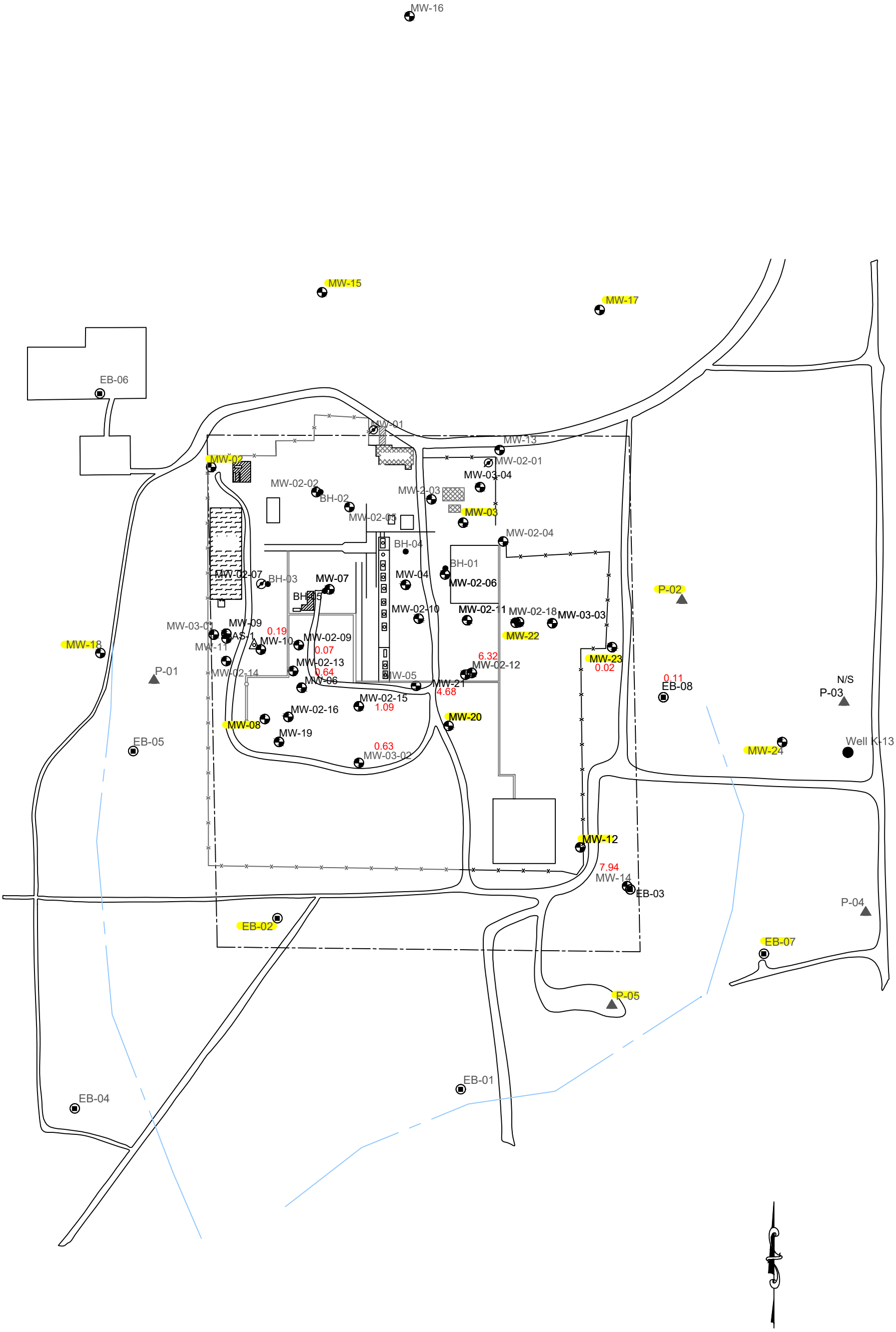
32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 4a- Apparent LNAPL Thickness Map, April 26-27, 2021



Legend

MW-06 - Monitoring Well Location and Apparent LNAPL Thickness, Feet, January 4-5, 2022

MW-01 - Plugged and Abandoned Monitoring Well

EB-03 - Monitoring Well Location and Apparent LNAPL Thickness, Feet, January 4-5, 2022

P-03 - Piezometer (Fluid Level) Location

- Test Well Location

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC.

AP - 112 / Empire - Abo Compressor Station

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

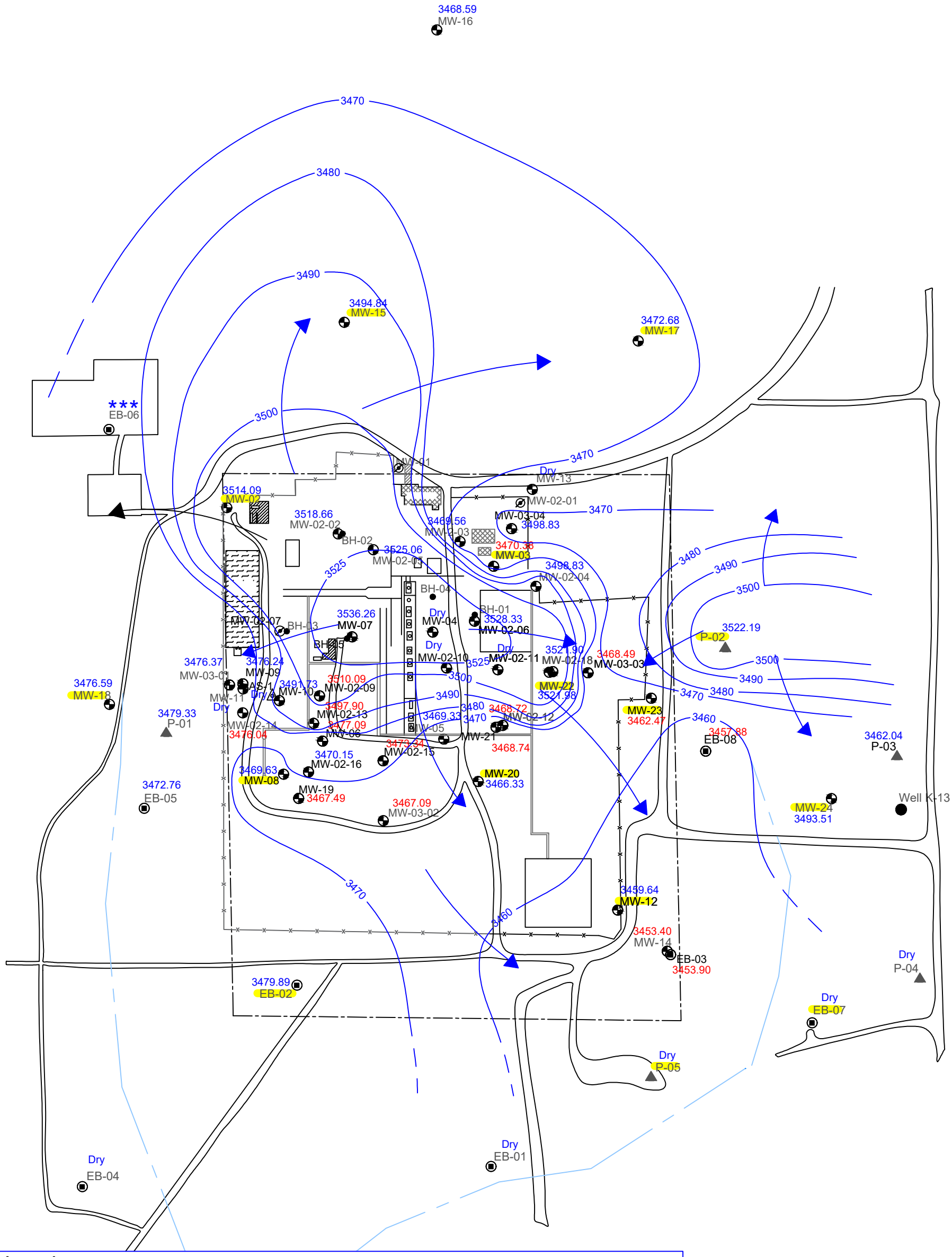
32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 4a- Apparent LNAPL Thickness Map, January 4-5, 2022



Legend

- 3490 — Contour of Groundwater Potentiometric Surface Elevation, feet AMSL, April 26-27, 2021
- Groundwater Flow Direction
- 3476.59 MW-18 — Monitoring Well Location and Groundwater Potentiometric Surface Evelvation, feet AMSL, April 26-27, 2021
- MW-01 — Plugged and Abandoned Monitoring Well
- 3479.89 EB-02 — Monitoring Well Location and Groundwater Potentiometric Surface Elevation, feet AMSL, April 6-7, 2020
- 3522.19 P-02 — Piezometer (Fluid Level) Location and Groundwater Potentiometric Surface Elevation, feet AMSL, April 26-27, 2021
- Test Well Location
- N/S — Not Sampled
- * — Hydrocarbon Product Present in Well
- ** — H2S Present in Well
- *** — Well Obstructed

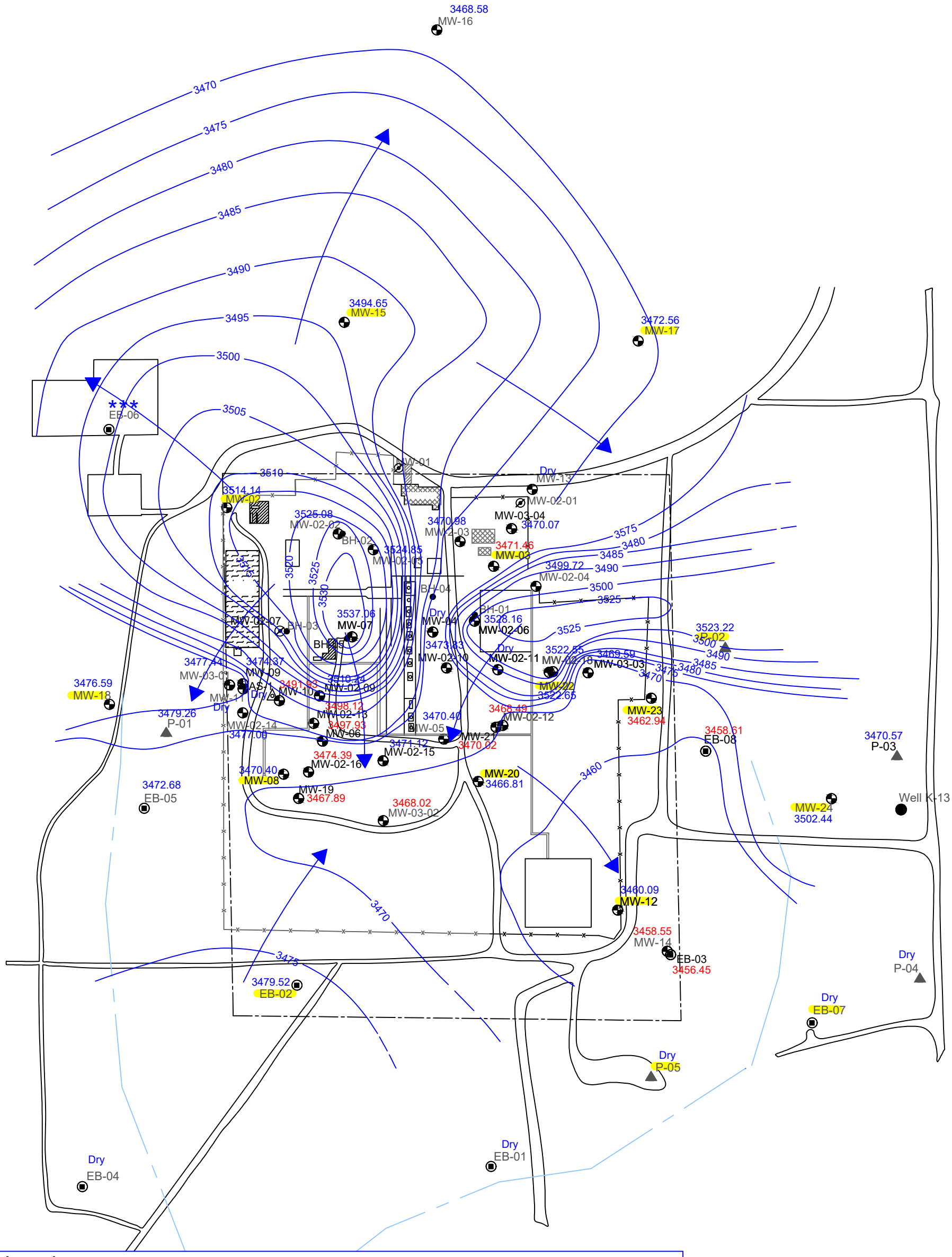
Fence
Property Line
Draw
Road

300 0 300
Graphic Scale in Feet

Aka Energy Group, LLC.
AP - 112 / Empire - Abo Compressor Station
Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E
Eddy County, New Mexico
32° 46' 33.7"N
104° 15' 37.22"W

Larson & Associates, Inc.
Environmental Consultants

Figure 5a- Groundwater Potentiometric Surface Map, April 26-27, 2021



Legend

- 3490 — - Contour of Groundwater Potentiometric Surface Elevation, feet AMSL, January 4-5, 2022
- → - Groundwater Flow Direction
- 3476.59 MW-18 - Monitoring Well Location and Groundwater Potentiometric Surface Evelvation, feet AMSL, January 4-5, 2022
- MW-01 - Plugged and Abandoned Monitoring Well
- 3479.89 EB-02 - Monitoring Well Location and Groundwater Potentiometric Surface Elevation, feet AMSL, January 4-5, 2022
- 3522.19 P-02 - Piezometer (Fluid Level) Location and Groundwater Potentiometric Surface Elevation, feet AMSL, January 4-5, 2022
- - Test Well Location
- N/S - Not Sampled
- * - Hydrocarbon Product Present in Well
- ** - H2S Present in Well
- *** - Well Obstructed

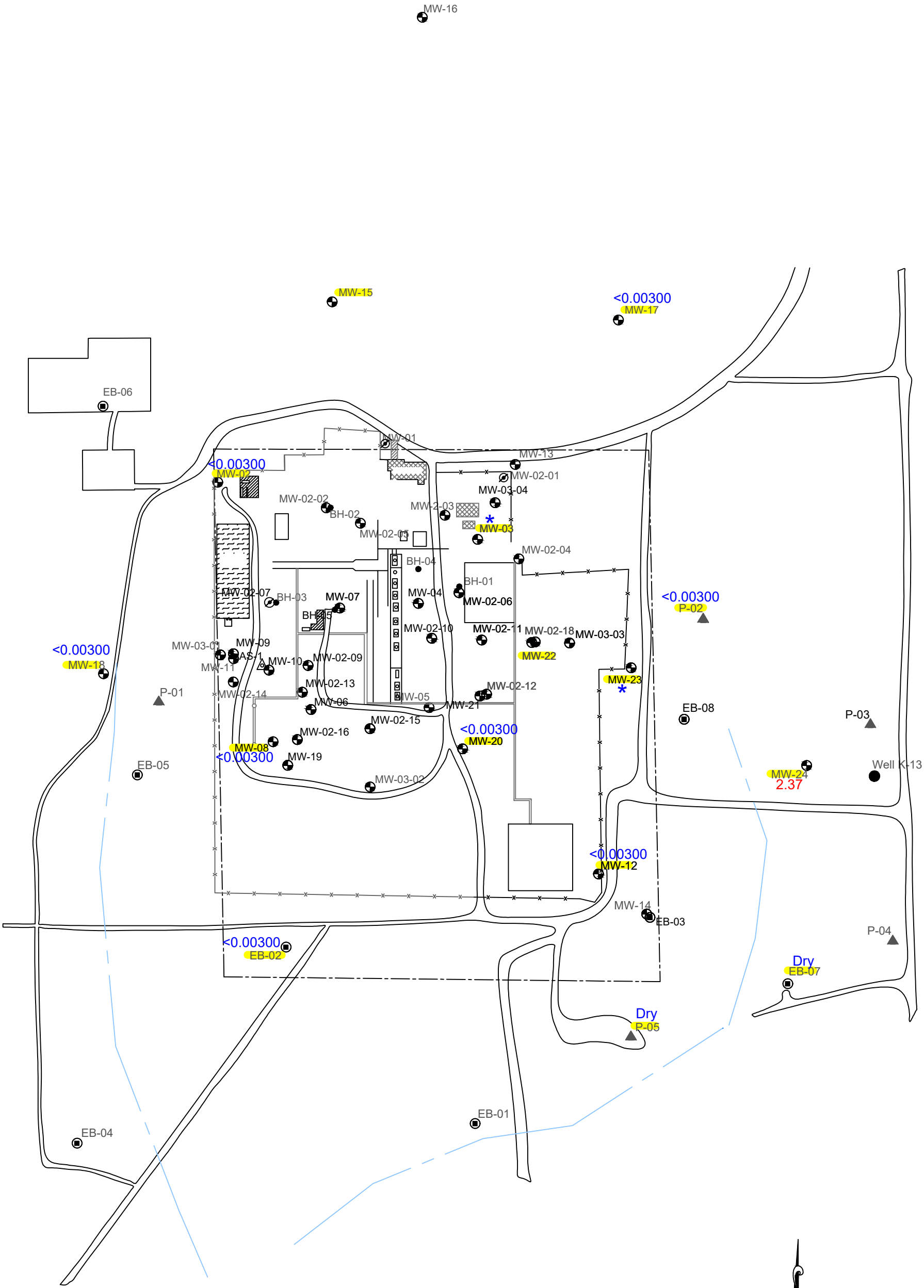
- Fence
- Property Line
- Draw
- Road

300 0 300
Graphic Scale in Feet

Aka Energy Group, LLC.
AP - 112 / Empire - Abo Compressor Station
Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E
Eddy County, New Mexico
32° 46' 33.7"N
104° 15' 37.22"W

Larson & Associates, Inc.
Environmental Consultants

Figure 5b- Groundwater Potentiometric Surface Map, January 4-5, 2022



Legend

<0.00300 MW-08 - Monitoring Well Location and Dissolved Benzene in Groundwater, mg/L, April 26-27, 2021

MW-01 - Plugged and Abandoned Monitoring Well

<0.00300 EB-02 - Monitoring Well Location

<0.00300 P-02 - Piezometer (Fluid Level) Location and Dissolved Benzene in Groundwater, mg/L, April 26-27, 2021

AS-1 - Test Well Location

< - Concentration Below Method Reporting Limit

* - LNAPL Present - No Sample Collected

Red: Exceeds WACC Human Health Standard : 0.01 mg/L

Fence

Property Line

Draw

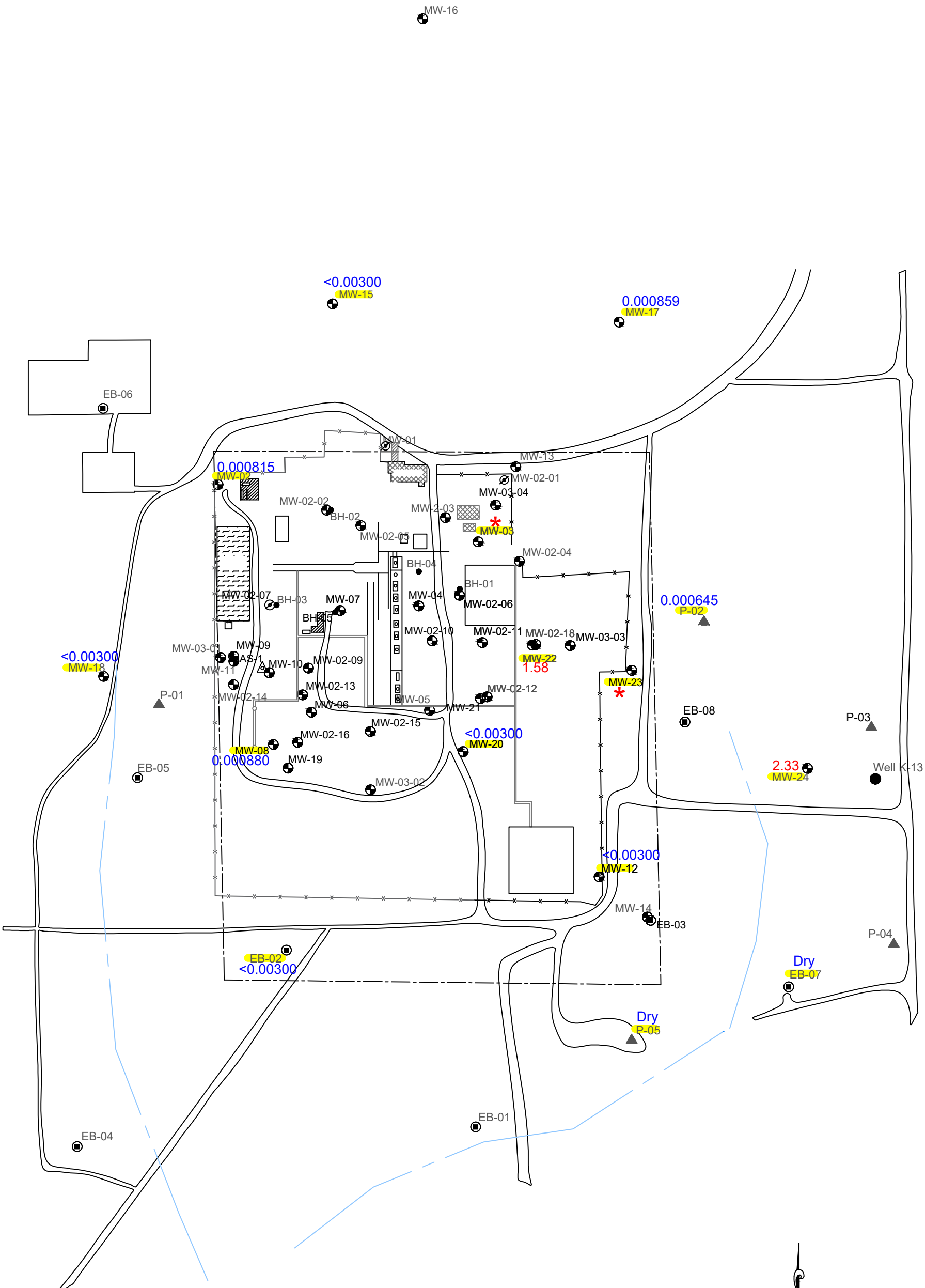
Road

300 0 300
Graphic Scale in Feet

Aka Energy Group, LLC.
AP - 112 / Empire - Abo Compressor Station
Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E
Eddy County, New Mexico
32° 46' 33.7"N
104° 15' 37.22"W

Larson & Associates, Inc.
Environmental Consultants

Figure 6a - Benzene Concentration in Groundwater Map, April 26-27, 2021



Legend

0.000880 MW-08 - Monitoring Well Location and Dissolved Benzene in Groundwater, mg/L, January 5-6, 2022

MW-01 - Plugged and Abandoned Monitoring Well

<0.003 EB-02 - Monitoring Well Location and Dissolved Benzene in Groundwater, mg/L, January 5-6, 2022

0.000645 P-02 - Piezometer (Fluid Level) Location and Dissolved Benzene in Groundwater, mg/L, January 5-6, 2022

< - Concentration Below Method Reporting Limit

* - LNAPL Present

Red: Exceeds WACC Human Health Standard : 0.01 mg/L

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC.

AP - 112 / Empire - Abo Compressor Station

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

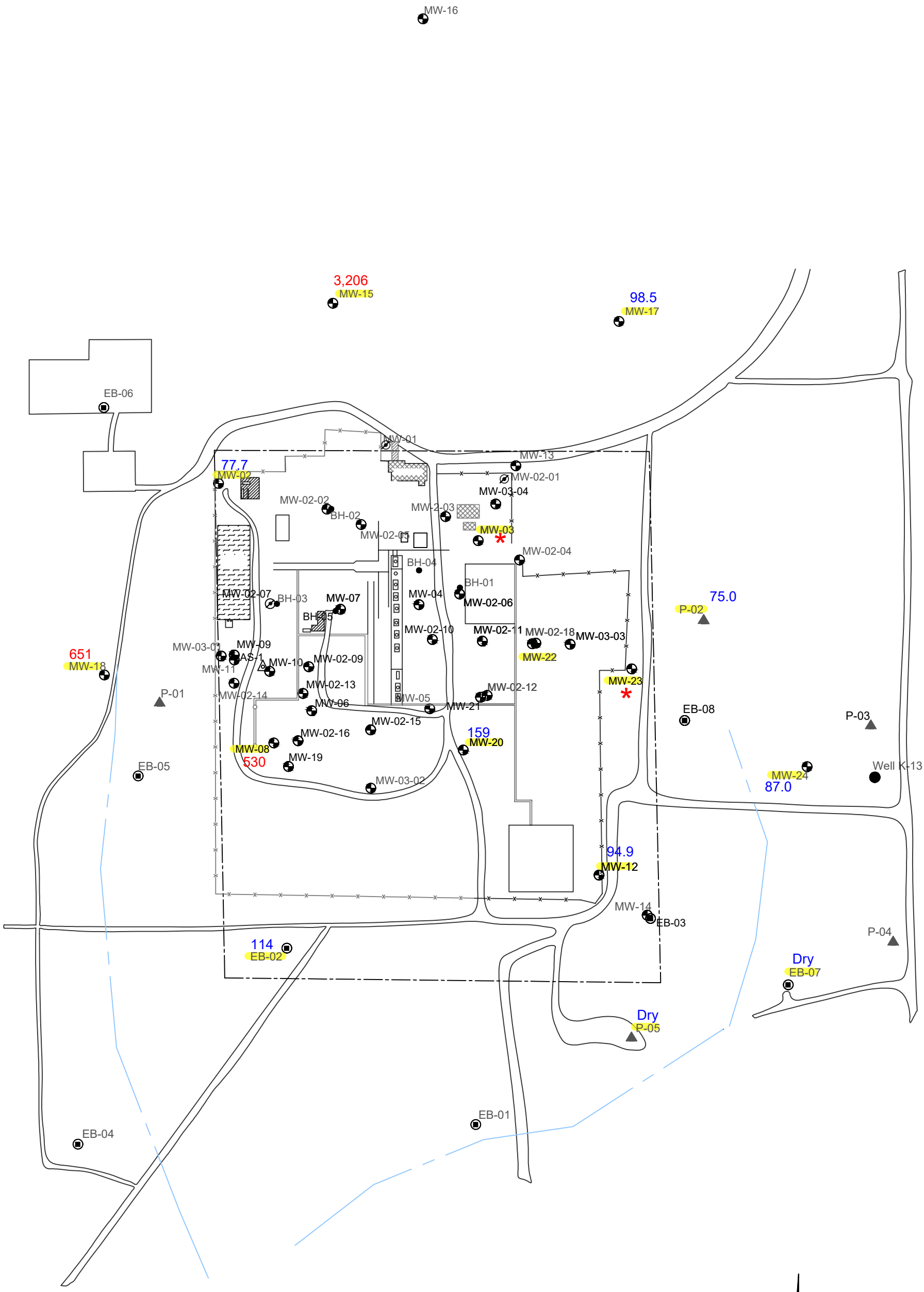
32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 6b - Benzene Concentration in Groundwater Map, January 5-6, 2022



Legend

530 MW-08 - Monitoring Well Location and Chloride Concentration in Groundwater, mg/L, April 27-28, 2021

MW-01 - Plugged and Abandoned Monitoring Well

114 EB-02 - Monitoring Well Location and Chloride Concentration in Groundwater, mg/L, April 27-28, 2021

75.0 P-02 - Piezometer (Fluid Level) Location and Chloride Concentration in Groundwater, mg/L, April 27-28, 2021

△ - Test Well Location

* - LNAPL Present - No Sample Collected

Red: Exceeds NMWQCC Domestic Water Quality Standard: 250 mg/L

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC

AP - 112 / Empire - Abo Compressor Station

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

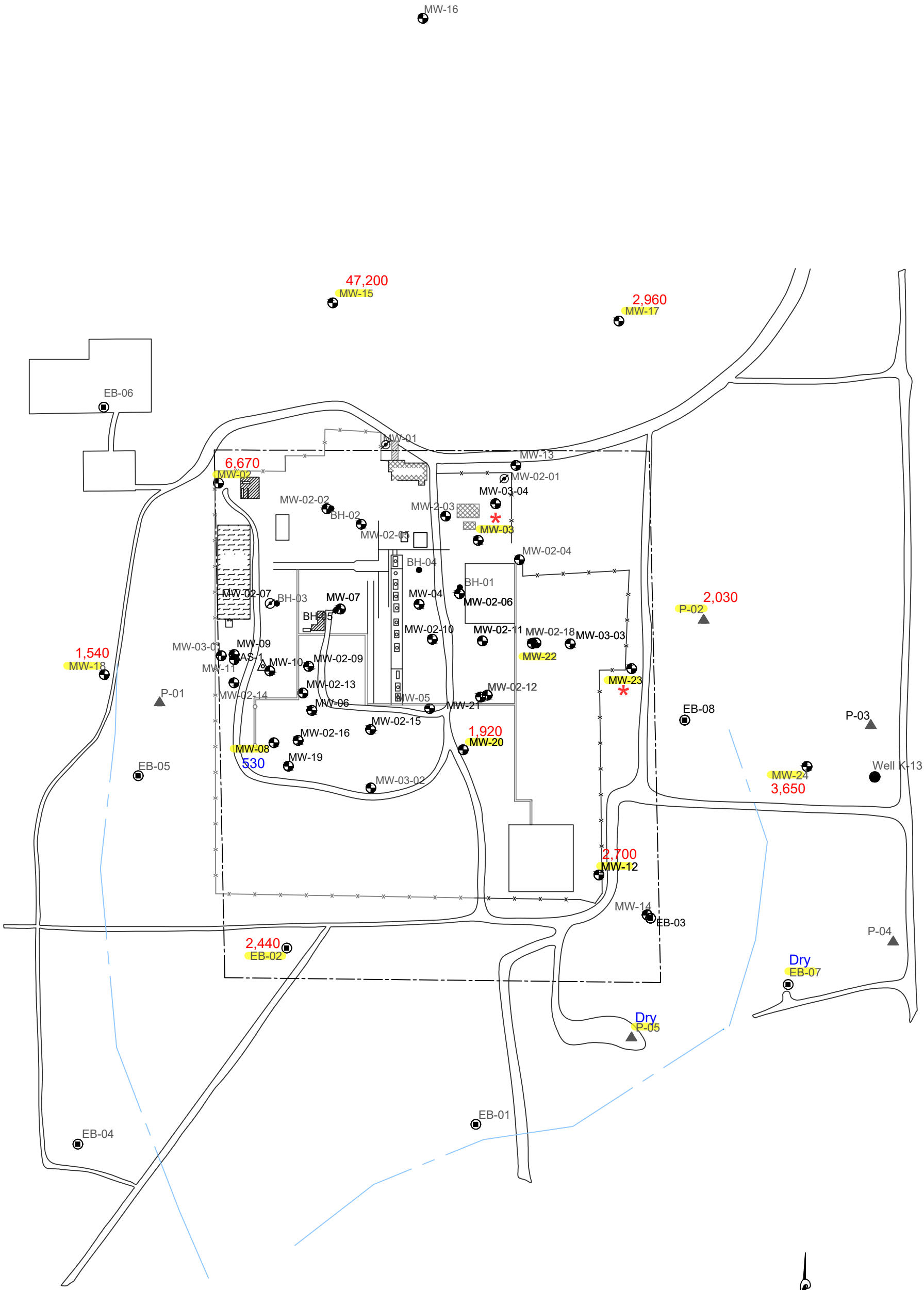
32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 7 - Chloride Concentration in Groundwater, April 27-28, 2021



Legend

530 MW-08 - Monitoring Well Location and Sulfate Concentration in Groundwater, mg/L, April 27-28, 2021

- Plugged and Abandoned Monitoring Well

2,440 EB-02 - Monitoring Well Location and Sulfate Concentration in Groundwater, mg/L, April 27-28, 2021

2,030 P-02 - Piezometer (Fluid Level) Location and Sulfate Concentration in Groundwater, mg/L, April 27-28, 2021

AS-1 - Test Well Location

- LNAPL Present - No Sample Collected

Red- Exceeds NMWQCC Domestic Water Quality Standard: 600 mg/L

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC

AP - 112 / Empire - Abo Gas Plant

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

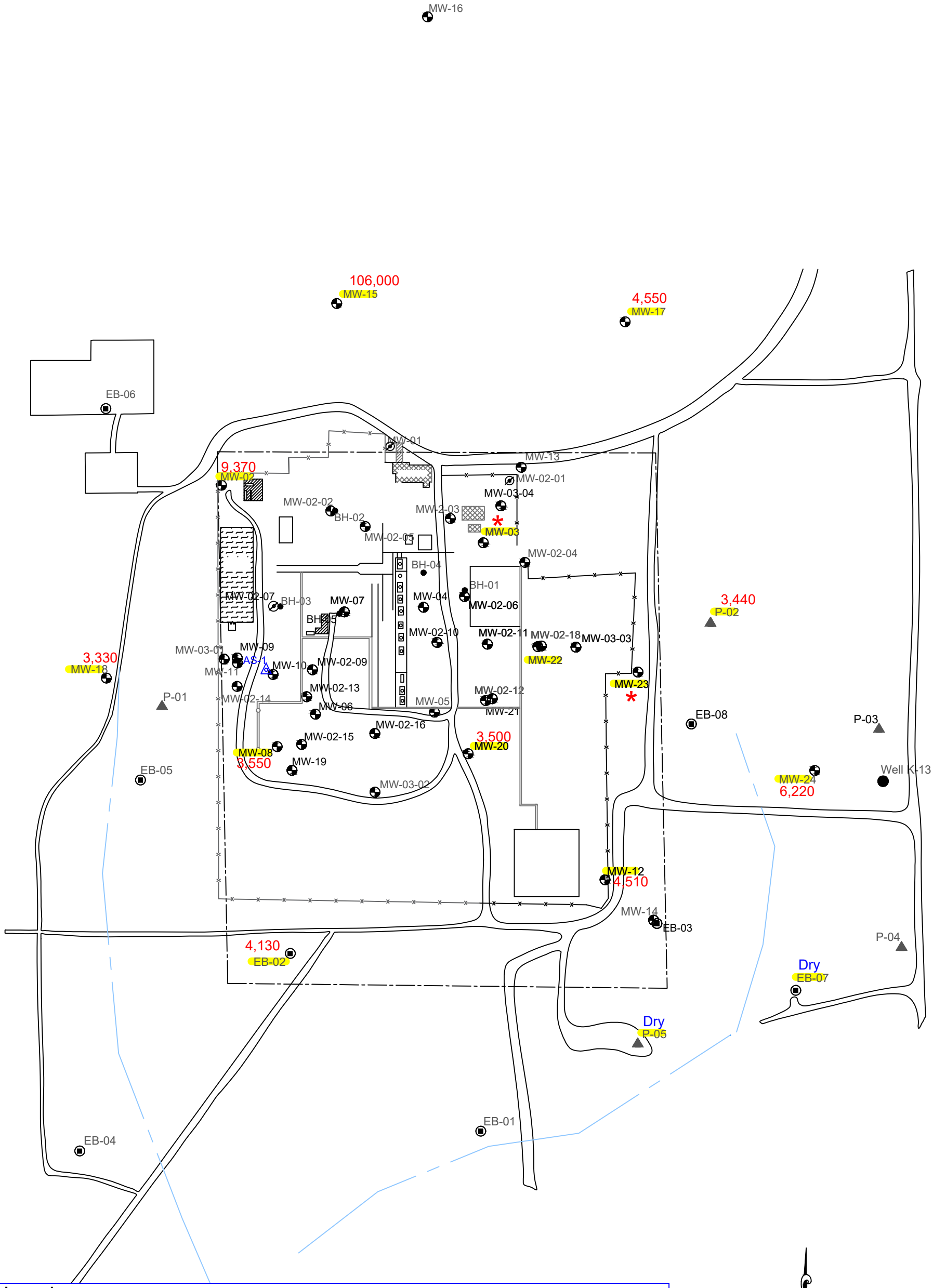
32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 8 - Sulfate Concentrations in Groundwater, April 27-28, 2021



Legend

3,330 MW-18 - Monitoring Well Location and TDS Concentration in Groundwater, mg/L, April 27-28, 2021

MW-01 - Plugged and Abandoned Monitoring Well

4,130 EB-02 - Monitoring Well Location and TDS Concentration in Groundwater, mg/L, April 27-28, 2021

3,440 P-02 - Piezometer (Fluid Level) Location and TDS Concentration in Groundwater, mg/L, April 27-28, 2021

AS-1 - Test Well Location

N/S - Not Sampled - Well Obstructed

* - LNAPL Present - No Sample Collected

RED: Exceeds NMWQCC Domestic water Quality Standard: 1,000 mg/L

Fence

Property Line

Draw

Road

300 0 300

Graphic Scale in Feet

Aka Energy Group, LLC

AP - 112 / Empire - Abo Compressor Station

Unit I, (NE/4, SE/4)- 18 - S, R - 27 - E

Eddy County, New Mexico

32° 46' 33.7"N

104° 15' 37.22"W

Larson & Associates, Inc.

Environmental Consultants

Figure 9 - TDS Concentration in Groundwater, April 27-28, 2021

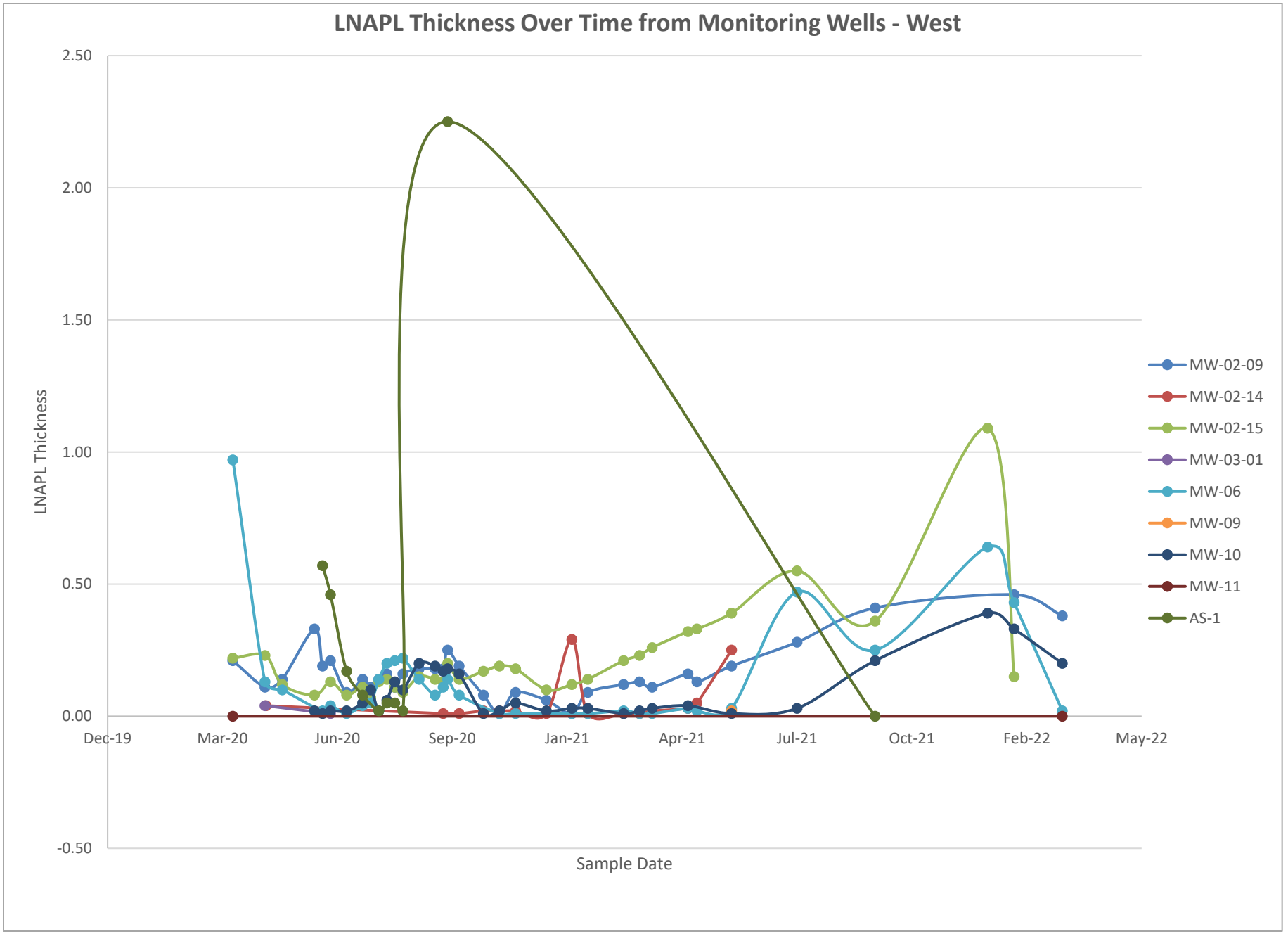


Figure 11 - LNAPL Control Chart for West Side Monitoring Wells

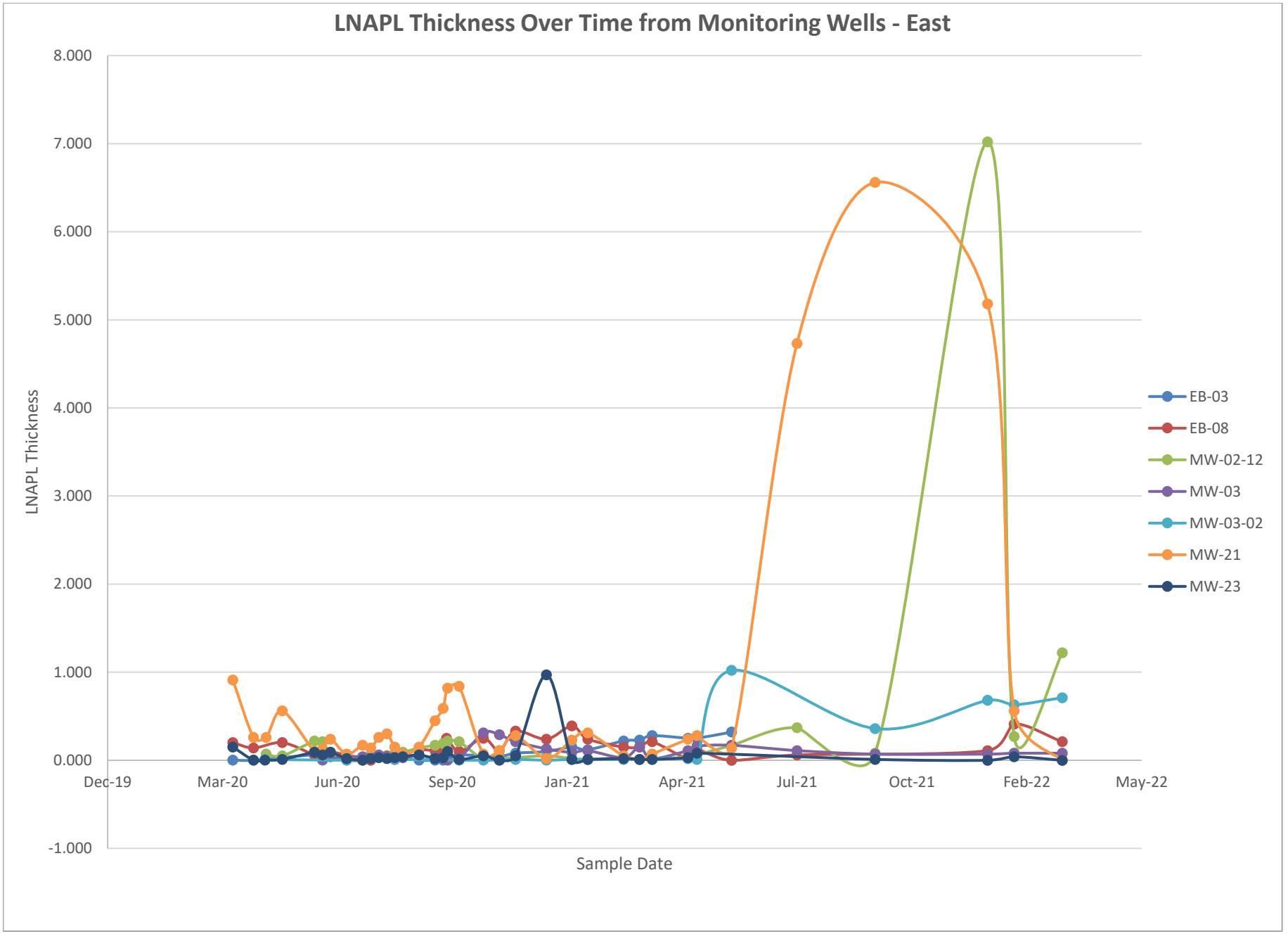


Figure 10 - LNAPL Control Chart for East Side Monitoring Wells

Appendix A

NMOSE Communications

STATE OF NEW MEXICO
OFFICE OF THE STATE ENGINEER
SANTA FE

Scott A. Verhines, P.E.
State Engineer

CONCHA ORTIZ Y PINO BLDG.
POST OFFICE BOX 25102
130 SOUTH CAPITOL
SANTA FE, NEW MEXICO 87504-5102
(505) 827-6091
FAX: (505) 827-3806

March 8, 2013

Permit Number: Evaluation of Empire Abo Gas Processing Plant remediation Plan

Larson and Associates Inc
Attn: Jeremy J. C. Cannady
507 North Marienfeld, Suite 202
Midland Texas 79701

GREETINGS:

The Hydrology evaluation for the remediation plan you submitted concerning the Empire Abo Gas Processing station concluded there was mounded water under the plant and the planned pumping would not cause effects to the Pecos River. You may proceed with the plan and can submit an application to appropriate and any necessary well permits if required.

Sincerely,

Tim Williams

Tim Williams
Carlsbad Basin Watermaster
Water Resource Allocation Program
Water Rights Division
District II Office of the State Engineer
1900 West Second Street
Roswell New Mexico 88201

MEMORANDUM
OFFICE OF THE STATE ENGINEER
Hydrology Bureau

DATE: March 5, 2013

TO: Tim Williams, Carlsbad Basin Watermaster

FROM: Alan Cuddy, Hydrology Bureau AJC

THROUGH: Mike Johnson, Chief, Hydrology Bureau MJ

SUBJECT: Hydrologic Analysis of Empire Abo Gas Plant Remediation

Introduction

The Empire Abo Gas Plant is a natural gas processing plant that separates alkanes from natural gas. The plant is approximately nine miles east-southeast of Artesia, NM in T18S, R27E, Section 3 (Figure 1). An abatement plan (Larson & Associates, 2013) proposes to pump 36.32 acre-feet/year (afy) of contaminated groundwater for 5.52 years from beneath the plant for remediation. The water will be treated and injected in a disposal well.

This analysis evaluates the impacts on water levels near the plant and impacts to the Pecos River as a result of the remediation efforts.

Hydrogeology

The hydrology near the Plant has been described by Larson & Associates (2013). The plant site is underlain anhydrite, gypsum and salts of the Tansill Formation, part of the Artesia Group, extending approximately 60 to 70 feet below the surface. The Tansill Formation is underlain by red mudstones, shales and clays of the Yates Formation.

Historically, groundwater is reported to have moved to the south-southwest near the plant. Currently, depths to water near the plant range from about 15 to 65 feet. The water table appears to be mounded beneath the plant as a result of water leaks from the facility. As a result of the mound, groundwater flows in all directions away from the plant. The height of the mound, based on Figures 8a and 8b from Larson & Associates (2013), appears to be approximately 40 to 50 feet above the regional water levels.

Groundwater beneath the plant contains high total dissolved solids (TDS) concentrations, ranging from about 3,000 to 500,000 mg/L. Light, non-aqueous phase liquid (LNAPL) was also found under the plant at thicknesses up to nearly nine feet.

A pumping test was conducted at the plant and the data were presented in Larson & Associates (2013). Well MW-9 was pumped for 72 hours and water levels were measured in four observation wells (MW-03-01, MW-11, MW-02-14 and MW-10). A distance-drawdown plot was prepared for this analysis from the test data (Figure 2). Well MW-11 dried up during the test and was not used in the data interpretation. A transmissivity of 267 gallons per day/foot and a hydraulic conductivity of 1.28 feet/day were estimated from the test data.

A specific yield of 0.03 was used for the sedimentary rocks in this analysis.

The proposed abatement system will consist of 10 extraction wells at the plant. The wells will be constructed with 50 feet of screen, of which 25 feet will be below water. The wells will be pumped for 5.52 years at a combined rate of 36.32 afy. Water will be treated and injected in a permitted disposal well. It is assumed that there will be no hydraulic effects from the injected water.

River Depletion Analysis

The river depletion analysis was performed by calculating the effects of pumping at the plant using the Hydrology Bureau's Glover-Balmer program. The groundwater system is believed to be in communication with the Pecos River, which lies approximately 3.4 miles west of the plant (Figure 1).

Specific inputs to the Glover-Balmer program are described below.

Transmissivity. A hydraulic conductivity in the vicinity of the plant was estimated at 1.28 ft/day based on the pump test conducted at the plant. A 25-foot saturated thickness is planned for the remediation wells. The saturated thickness multiplied by the hydraulic conductivity results in a transmissivity of approximately 32 ft^2/day.

Specific Yield. A specific yield of 0.03 was estimated for the sedimentary rocks in which the remediation wells will be completed.

Pumping Rate. A constant pumping rate of 36.32 afy for 5.52 years was used based on the proposed abatement plan.

Distance to River. The distance to the nearest point on the Pecos River is approximately 3.4 miles.

Boundaries. Because there is no no-flow boundary in the vicinity of the well, the no-flow boundary, required by the Glover-Balmer program, was set at a distance of 50 miles from the river to minimize the effect of the boundary.

The depletions on flows in the Pecos River are shown on Figure 3. The maximum depletion occurs approximately 140 years after the start of the remediation pumping and occurs at a rate of approximately 0.22 afy.

The calculated depletion of 0.22 afy is relative to current conditions. The presence of the groundwater mound under the plant has increased the hydraulic gradient towards the Pecos River and thus increased groundwater flow into the river. The remediation pumping is expected to cause drawdowns in the vicinity of the plant of up to 36 feet, enough to nearly offset the presence of the mound, thus returning groundwater levels back to their approximate original configuration. As a result, no new depletions to the Pecos River are expected in excess of natural conditions. The proposed depths of the extraction wells of 25 feet below the water-LNAPL interface may be insufficient to lower the mound to natural conditions.

Drawdown Analysis

The OSE has no records of active wells within two miles of the plant. Drawdown for a hypothetical well located two miles from the plant was calculated with the Theis equation. Inputs to the Theis equation were generally the same as those for the Glover-Balmer inputs; however, the units were different. The Theis inputs were:

Transmissivity = 239 gallons/day/foot

Specific Yield = 0.03

Pumping Rate = 22.5 gallons per minute

Distance to Well = 10,560 feet

The maximum drawdown two miles away from the plant is slightly more than 0.3 feet and occurs approximately 75 years after remediation pumping starts (Figure 4). A drawdown of this magnitude is not expected to cause wells greater than two miles from the plant to become inoperable.

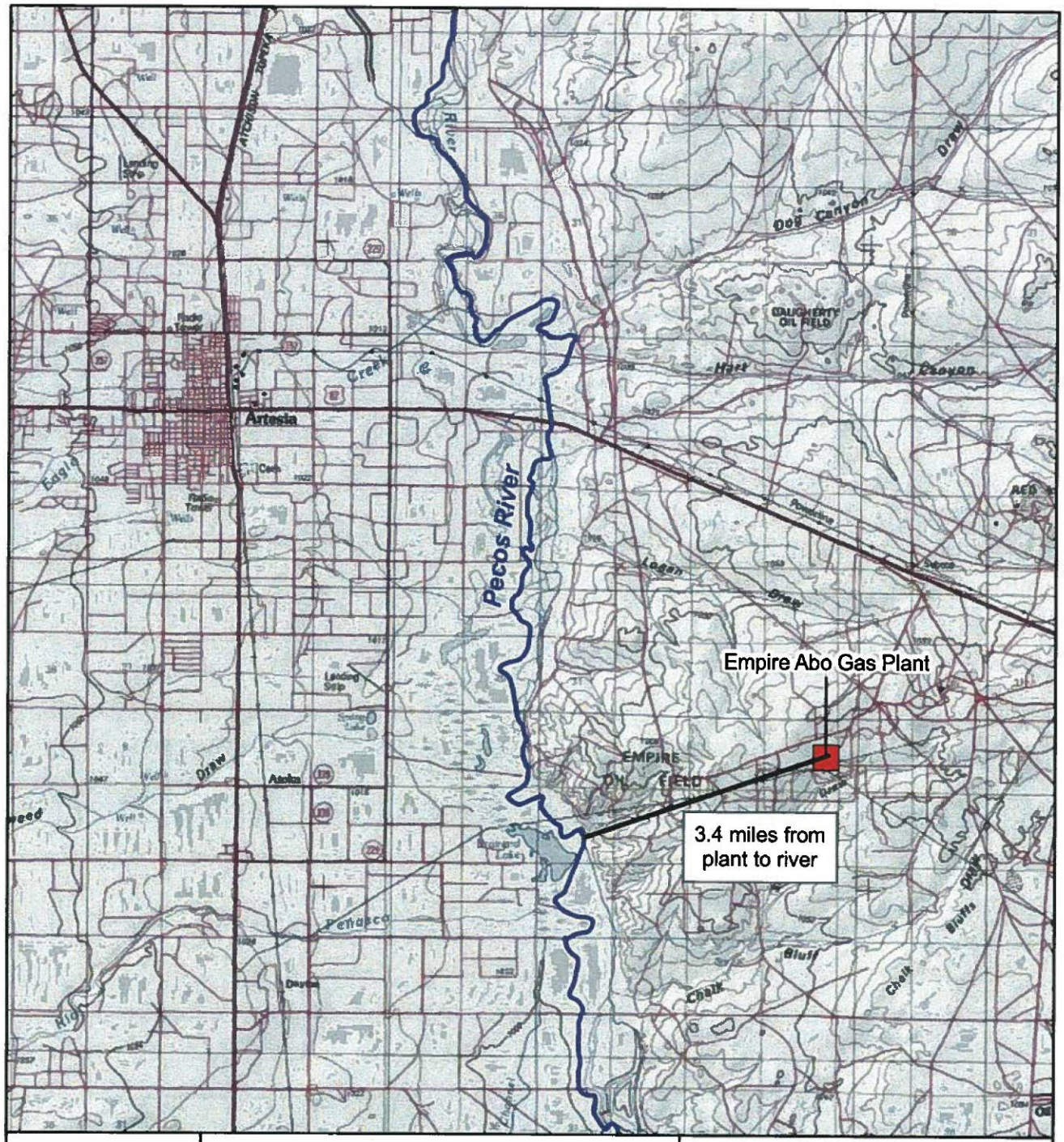
Conclusions

1. Remediation pumping is expected to return groundwater levels closely to natural conditions. Thus, no new depletions to the Pecos River are expected.

2. Drawdowns resulting from remediation pumping are not expected to cause wells to become inoperable.

References

Larson & Associates, Inc., 2013. Groundwater Abatement Plan, Empire Abo Gas Plant, Eddy County, New Mexico AP-112. Consultant's Report prepared for Frontier Field Services, LLC, dated January 15, 2013.



EMPIRE ABO GAS PLANT

FIGURE 1

LOCATION OF THE EMPIRE ABO GAS PLANT

Office of the State Engineer
Hydrology Bureau

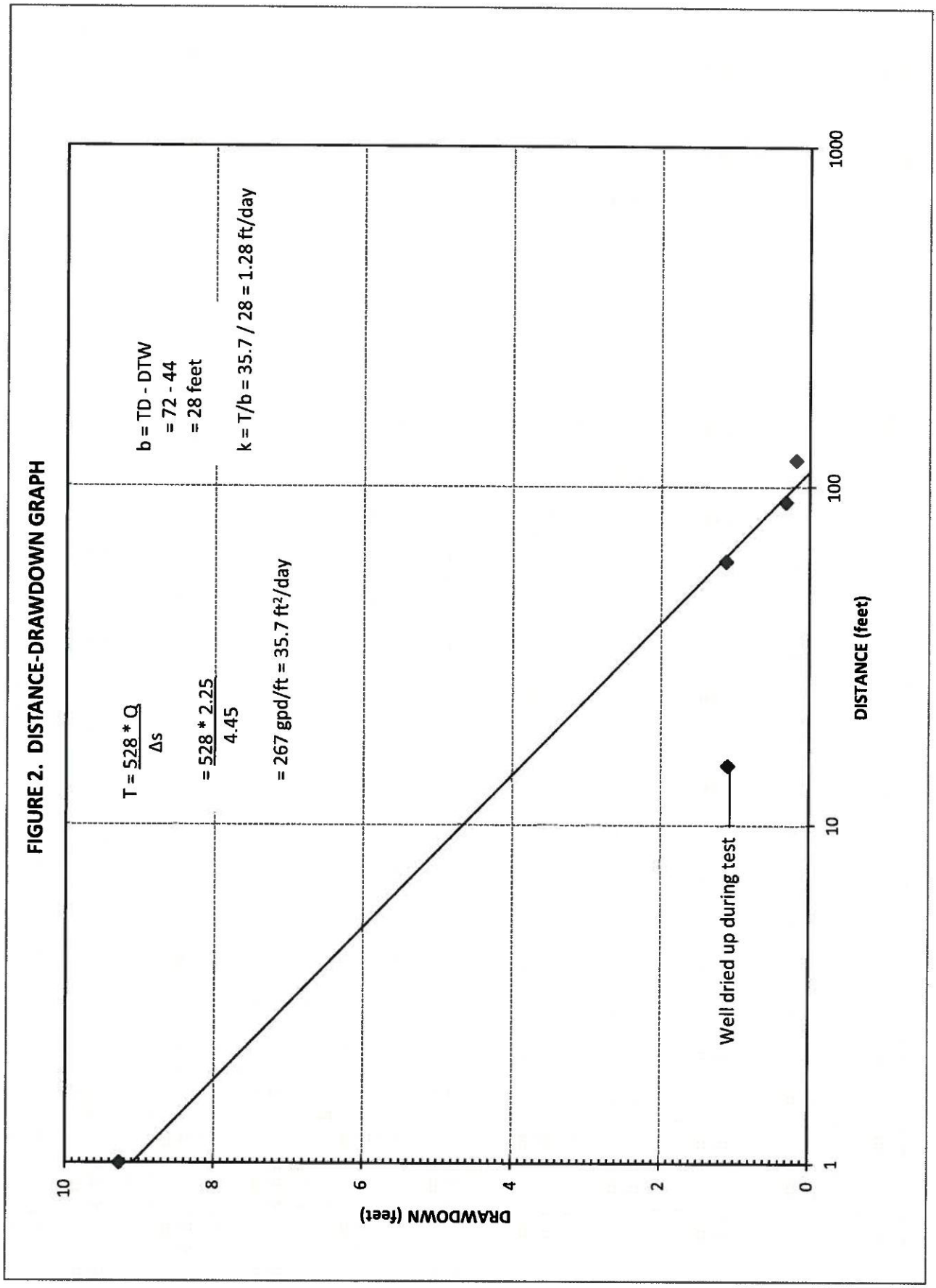


FIGURE 2. DISTANCE-DRAWDOWN GRAPH
T = 528 * Q / Δs
= 528 * 2.25 / 4.45
= 267 gpd/ft = 35.7 ft²/day
b = TD - DTW
= 72 - 44
= 28 feet
k = T/b = 35.7 / 28 = 1.28 ft/day
Well dried up during test
DRAWDOWN (feet)
DISTANCE (feet)
0
2
4
6
8
10
1
10
100
1000

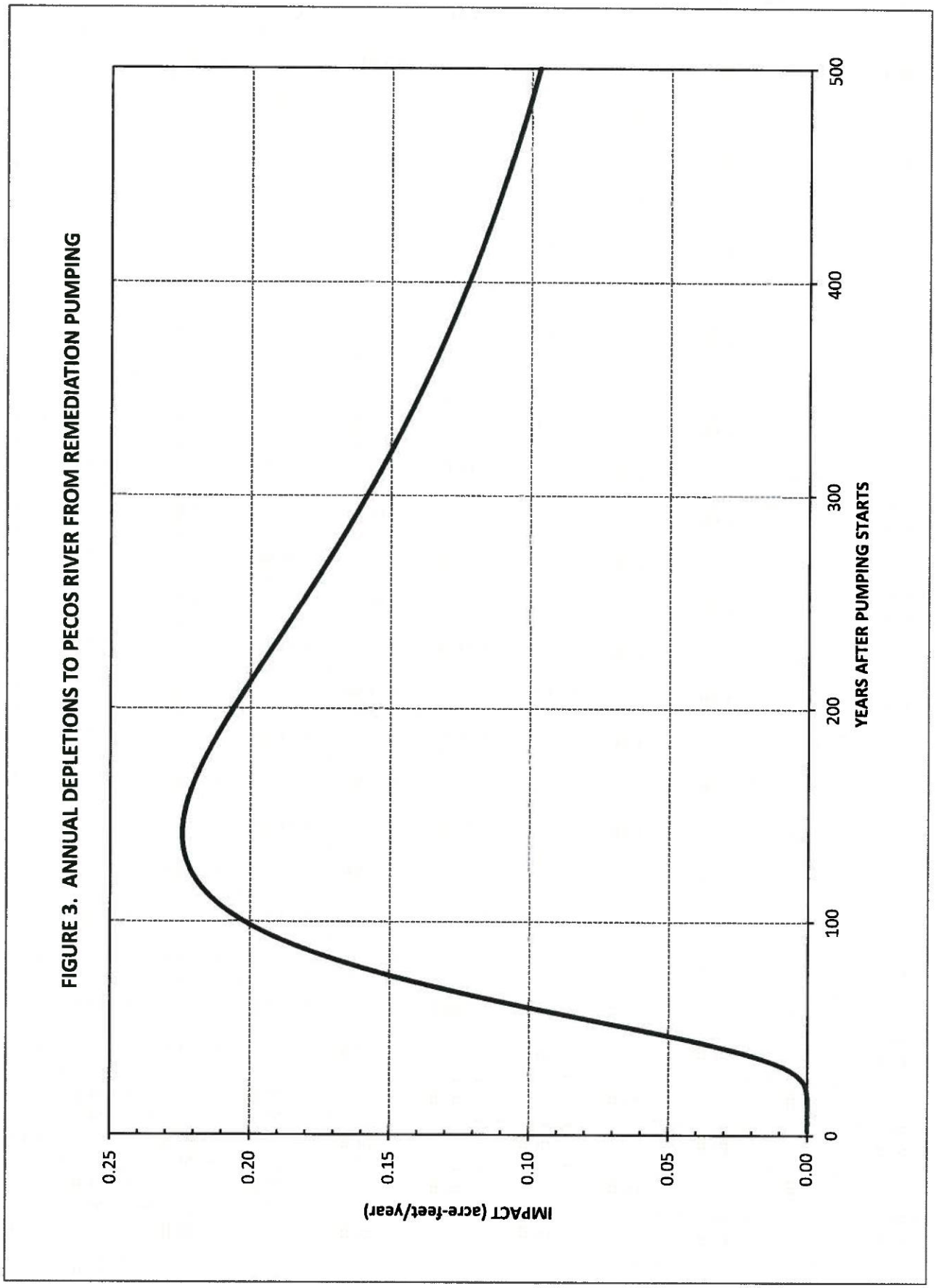


FIGURE 3. ANNUAL DEPLETIONS TO PECOS RIVER FROM REMEDIATION PUMPING
IMPACT (acre-feet/year)
0.25
0.20
0.15
0.10
0.05
0.00
0
100
200
300
400
500
YEARS AFTER PUMPING STARTS

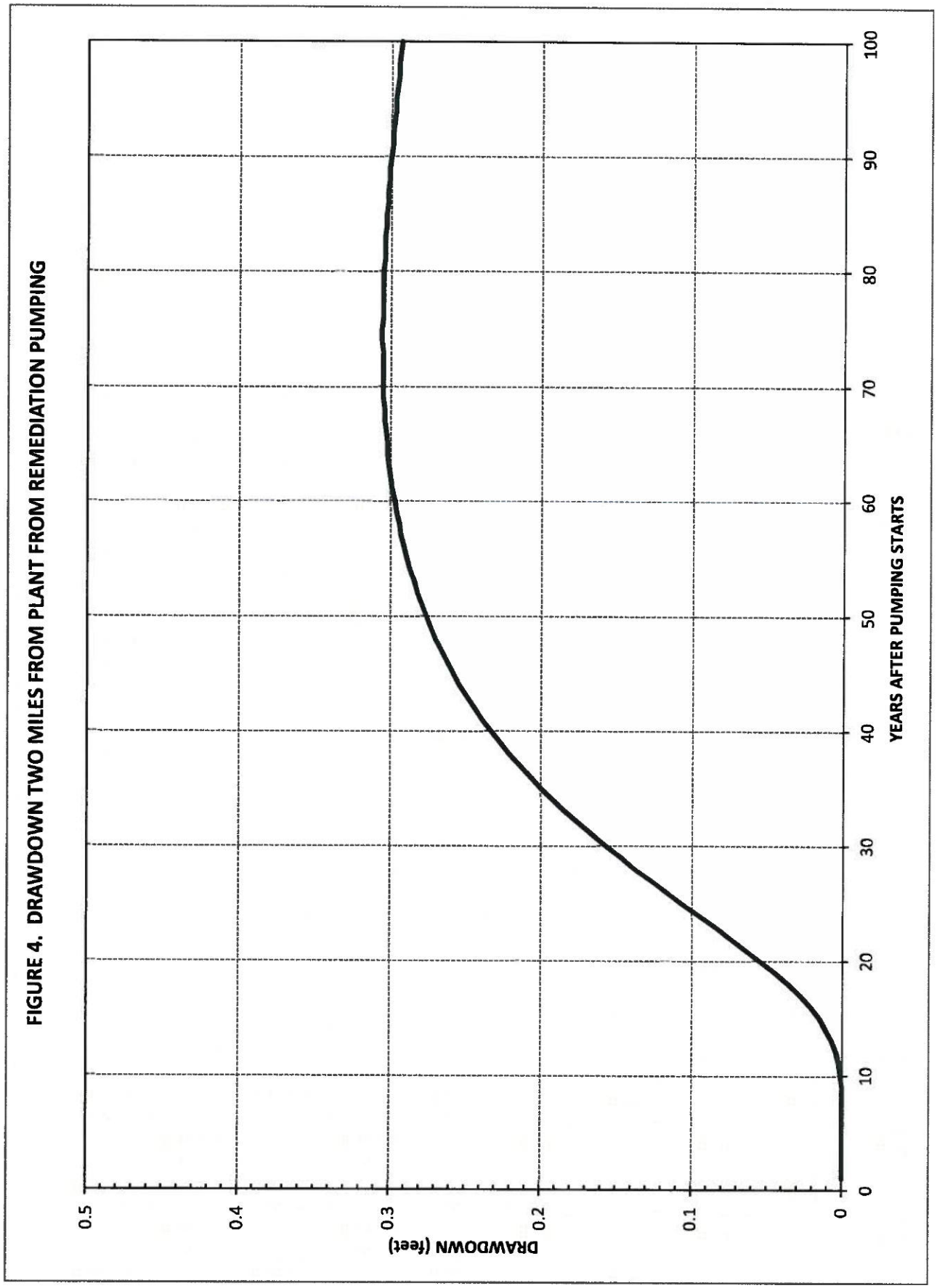
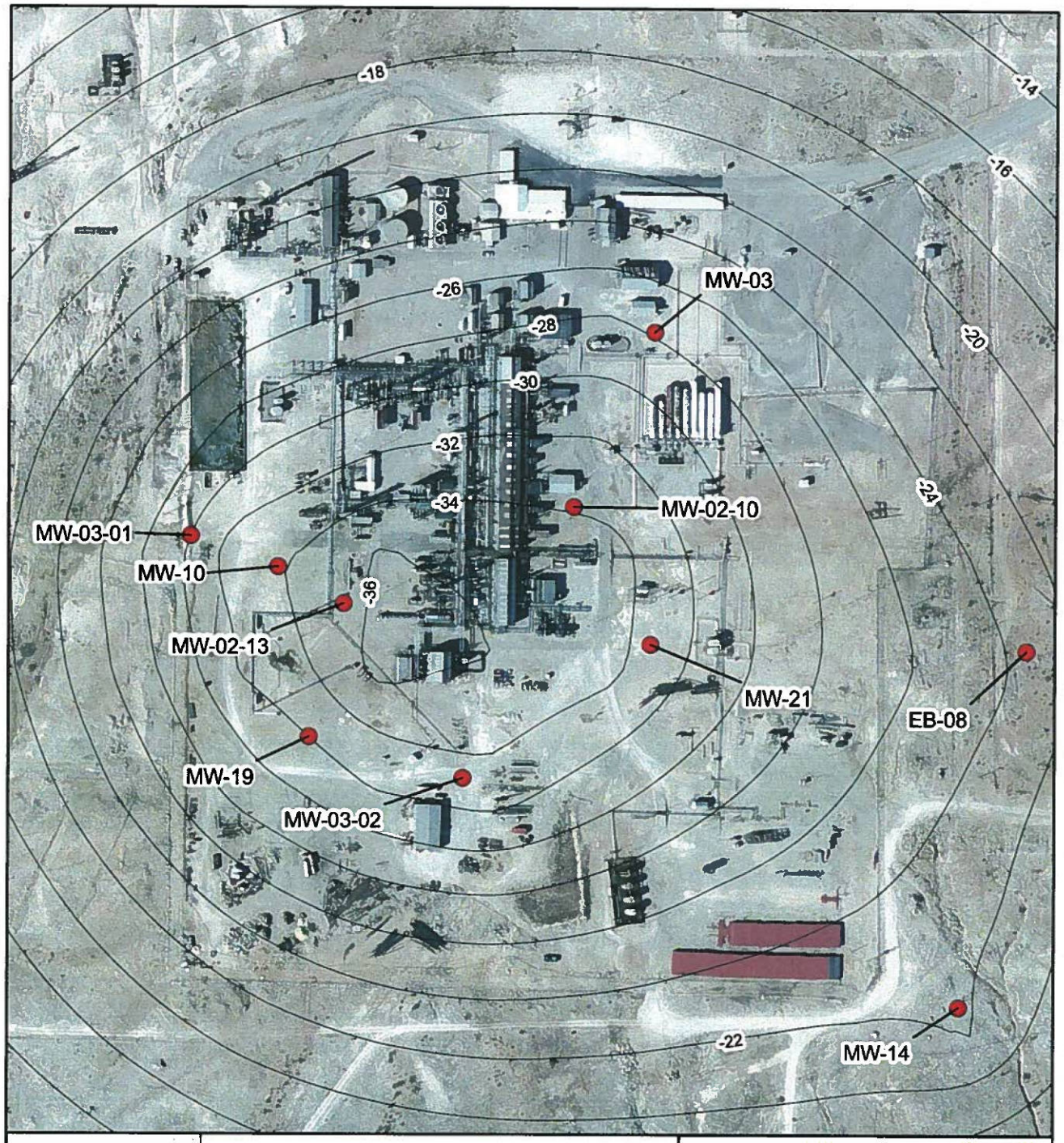


FIGURE 4. DRAWDOWN TWO MILES FROM PLANT FROM REMEDIATION PUMPING
DRAWDOWN (feet)
0
0.1
0.2
0.3
0.4
0.5
YEARS AFTER PUMPING STARTS
0
10
20
30
40
50
60
70
80
90
100



Office of the State Engineer
Interstate Stream Commission

Proposed Extraction Well

Calculated Water Level Decline

0 50 100 200
Feet

EMPIRE ABO GAS PLANT

FIGURE 5

CALCULATED WATER LEVEL DECLINE RESULTING FROM REMEDIATION PUMPING

Office of the State Engineer
Hydrology Bureau

Appendix B

NMOCD Communications

From: Griswold, Jim, EMNRD [Jim.Griswold@state.nm.us]
Sent: Tuesday, August 21, 2012 4:25 PM
To: Mark Larson
Cc: Brown, Fran; Prentiss, John; dfeather@akaenergy.com
Subject: RE: Groundwater Remediation Pilot Testing Work Plan, Frontier Field Services, LLC, Empire Abo Gas Plant, Eddy County, New Mexico, August 13, 2012

Mark,

I have reviewed the groundwater extraction and high vacuum pilot testing workplan dated Aug. 13th you developed for the Empire Abo Gas Plant. This plan is approved and you may proceed immediately. Please retain a copy of this email for your files as no hardcopy will be sent. I look forward to reviewing the eventual test evaluation report. Good luck.

Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Thursday, August 16, 2012 6:14 AM
To: VonGonten, Glenn, EMNRD; Griswold, Jim, EMNRD
Cc: Brown, Fran; Prentiss, John; dfeather@akaenergy.com
Subject: Re: Groundwater Remediation Pilot Testing Work Plan, Frontier Field Services, LLC, Empire Abo Gas Plant, Eddy County, New Mexico, August 13, 2012

Dear Mr. Von Gonten,
On August 15, 2012, Larson & Associates, Inc. (LAI), on behalf of Frontier Field Services, LLC (Frontier) delivered the referenced work plan to the New Mexico Oil Conservation Division (OCD) in Santa Fe, New Mexico. This is a request for your approval to implement he work plan for conducting groundwater remediation pilot testing at the Empire Abo Gas Plant located in Eddy County ,New Mexico. Please contact me if you have questions.
Sincerely,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 200
Midland, Texas 79701
(432) 687-0901 (O)
(432) 556-8656 (C)

Larson & Associates, Inc.
Environmental Consultants

From: Billings, Bradford, EMNRD [Bradford.Billings@state.nm.us]
Sent: Monday, October 23, 2017 2:24 PM
To: Mark Larson; 'Stahnke, Graham'
Cc: Carson Hughes
Subject: RE: Empire Abo Plant Groundwater Abatement (AP-112)

Hello,

Re: AP-112

Following review of recent submittal for AKA energy Group, by Larson & Associates, Inc., the following:

Request for wells on the Empire Abo site, as outlined in October 2017 submittal, that were requested to be taken off of routine sampling, not abandoned, is approved. Please keep me informed on the movement relative to expected sparge/vent testing.

Thank you for your efforts. Please keep this email by way of approval for your records. If there are additional requests, let me know.

Sincerely,

Bradford Billings
EMNRD/OCD
Santa Fe

From: Mark Larson [mailto:Mark@laenvironmental.com]
Sent: Monday, October 9, 2017 4:10 PM
To: Billings, Bradford, EMNRD <Bradford.Billings@state.nm.us>; 'Stahnke, Graham' <gstahnke@sugf.com>
Cc: Carson Hughes <chughes@laenvironmental.com>
Subject: Re: Empire Abo Plant Groundwater Abatement (AP-112)

Bradford,
Per our conference call on May 15, 2017, AKA Energy Group, LLC, has requested Larson & Associates, Inc. (LAI) to prepare the attached letter for submittal to the OCD. The letter proposes to reduce the number of monitoring wells for semiannual groundwater monitoring and conducting pilot tests (SVE and air sparge) at the Empire Abo Plant, in Eddy County, New Mexico. We propose begin collecting groundwater samples from the proposed monitoring wells beginning with the next semiannual event scheduled for October 24 – 27, 2017. The air sparge pilot well will be installed in November 2017 followed by the SVE pilot test. A date for the air sparge pilot test will be set following completion of the SVE test and system installation. Please contact Graham Stahnke at (970) 764-6484 or gstahnke@sugf.com or me if you have questions.
Mark

From: Mark Larson
Sent: Wednesday, May 03, 2017 12:01 PM
To: 'Billings, Bradford, EMNRD'; 'Stahnke, Graham'
Subject: Re: Empire Abo Plant Groundwater Abatement (AP-112)

Brad,
I called your office and left a voice message requesting a convenient time for a conference call to discuss the Abatement Plan for the Frontier Empire Abo Plant (AP-112)? Graham Stahnke with Southern Ute Growth Fund (SUGF), which owns AKA Energy, LLC., would like to be on the call. Please let me know a convenient date/time for you.
Respectfully,

Mark J. Larson, P.G.
President/Sr. Project Manager
507 N. Marienfeld St., Suite 205
Midland, Texas 79701
Office – 432-687-0901
Cell – 432- 556-8656
Fax – 432-687-0456
mark@laenvironmental.com

"Serving the Permian Basin Since 2000"

Appendix C

Laboratory Reports

May 13, 2021

Mark Larson
Larson & Associates
507 N. Marienfeld #202
Midland, TX 79701
TEL: (432) 687-0901
FAX: (432) 687-0456

Order No.: 2105017

RE: Empire ABO

Dear Mark Larson:

DHL Analytical, Inc. received 13 sample(s) on 5/4/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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№ 1620

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202
Midland, TX 79701
432-687-0901

DATE: 5/3/2021 PAGE 1 OF 1

PO#: LAB WORK ORDER#: 2105017

PROJECT LOCATION OR NAME: Empire ABO

LAI PROJECT #: 6-0141-06 COLLECTOR: DS/TJ/MB

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT W=WATER SL=SLUDGE A=AIR OT=OTHER

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESSERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☒ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☒ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☒ | Na, Ca, Mg, K, SO4

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESSERVED	BTEX	TRPH	TPH 1005	GASOLINE MOD 8015	DIESEL - MOD 8015	OIL - MOD 8015	VOC 8260	SVOC 8270	8081 PESTICIDES	8082 PCBS	TCLP - METALS (RCRA)	TCLP - PEST	TOTAL METALS (RCRA)	LEAD - TOTAL	RCI	TDS	pH	CHLORIDE	Na, Ca, Mg, K, SO4	FIELD NOTES
EB-02	01	4/27/21	0935	W	5	X			X		X												X			X	X	Lab Filter
Dup-1	02	"	—	"	"	"			"		"												"			"	"	
P-02	03	"	1005	"	"	"			"		"												"			"	"	
MW-15	04	"	1030	"	"	"			"		"												"			"	"	
MW-17	05	"	1110	"	"	"			"		"												"			"	"	
MW-18	06	"	1215	"	"	"			"		"												"			"	"	
MW-24	07	"	1320	"	"	"			"		"												"			"	"	
MW-05	08	4/28/21	0825	"	"	"			"		"												"			"	"	
MW-02	09	"	0855	"	"	"			"		"												"			"	"	
MW-20	10	"	0920	"	"	"			"		"												"			"	"	
MW-12	11	"	0945	"	"	"			"		"												"			"	"	
Dup-2	12	"	—	"	"	"			"		"												"			"	"	
Dup-3	13	"	—	"	"	"			"		"												"			"	"	
TOTAL																														

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	5/3/21 10:22	LSO
LSO	5/4/21 0945	[signature]

LABORATORY: DHL

3

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.42 THERM#: 78
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☒ CARRIER BILL # 250
☐ HAND DELIVERED

LSO

WWW.LSO.COM
Questions? Call 800-800-8984

Airbill No. LSO0BYH1

LSO0BYH1

1. To: Print Name (Person): Jon Dufont | Phone (Important): 512-388-8222
Company Name: DHL Analytical
Street Address (No P.O. Box or P.O. Box Zip Code® Deliveries): 2300 Double Creek Drive
Suite / Floor:
City: Round Rock | State: TX | Zip: 78664

2. From: Print Name (Person): John White | Phone (Important): 432-687-0901
Company Name: LARSON & ASSOCIATES
Street Address: 507 NORTH MARIENFELD
Suite / Floor: 205
City: MIDLAND | State: TX | Zip: 79701

3. Service: Visit www.lso.com for availability of services to your destination and enjoy added features by creating your shipping label online.

- [X] **LSO Priority Overnight*** By 10:30 a.m. to most cities
- [ ] **LSO Early Overnight*** By 8:30 a.m. select cities
- [ ] **LSO Economy Next Day*** By 3 p.m. to most cities
- [ ] **LSO 2nd Day***
- [ ] **LSO Ground**
- [ ] **LSO Saturday***
- [ ] Other _____

*Check commitment times and availability at www.lso.com

Assumed LSO Priority Overnight service unless otherwise noted.

- [ ] Deliver Without Delivery Signature (See Limits of Liability below)

Release Signature

L_____ x W_____ x H_____

4. Package: Weight: 50

Your Company's Billing Reference Information:

Ship Date: (mm/dd/yy) 05 / 03 / 21

5. Payment:

FOR DRIVER USE ONLY

Driver Number 1
- [X] Check here if LSO Supplies are used with LSO Ground Service.

Pick-up Location MAT
Date: 5-3-21
Time: 1430
City Code: AVS

ILLEGIBLE HANDWRITING ON AIRBILL MAY DELAY TRANSIT TIMES OR RESULT IN NON-DELIVERY. LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater value (not to exceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. If you ask us to deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. "Signature Required" service is only available when printing a label online at LSO.com. **NO DELIVERY SIGNATURE WILL BE OBTAINED FOR LSO EARLY OVERNIGHT SERVICE. Packaging provided by LSO is for EXPRESS USE ONLY – NEVER TO BE USED FOR LSO GROUND Service. OVERSIZE RATES MAY APPLY. DELIVERY COMMITMENTS MAY VARY. ADDITIONAL FEES MAY APPLY.** See LSO Service Guide for further details.

USTODY SE
5/3/21
TURE

AL DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Larson & Associates** Date Received: **5/4/2021**

Work Order Number **2105017** Received by: **EL**

Checklist completed by: Signature 5/4/2021 Date Reviewed by Initials 5/4/2021 Date

Carrier name: LSO Ground

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.4** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: Date contacted: Person contacted

Contacted by: Regarding:

Comments:

Corrective Action:

Page 1 of 1

DHL Analytical, Inc. **Date:** *13-May-21*

CLIENT: Larson & Associates
Project: Empire ABO
Lab Order: 2105017

CASE NARRATIVE

Sample was analyzed using the methods outlined in the following references:

Method SW6020B - Dissolved Metals Analysis
Method E300 - Anions Analysis
Method SW8260D - Volatile Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - Total Dissolved Solids Analysis

LOG IN

The samples were received and log-in performed on 5/4/2021. A total of 13 samples were received and analyzed. The samples arrived in good condition and were properly packaged. The samples were collected in Mountain Standard time-zone.

DISSOLVED METALS ANALYSIS

For Dissolved Metals Analysis, the recoveries of up to two analytes for the Matrix Spike and Matrix Spike Duplicate (2105017-05 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. No further corrective action was taken.

VOLATILES ANALYSIS

For Volatiles Analysis, the recovery of Benzene for the Matrix Spike and Matrix Spike Duplicate (2105017-07 MS/MSD) was above the method control limits. These are flagged accordingly in the QC Summary Report. This compound was within method control limits in the associated LCS. No further corrective action was taken.

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT: Larson & Associates
Project: Empire ABO
Lab Order: 2105017

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2105017-01	EB-02		04/27/21 09:35 AM	5/4/2021
2105017-02	DUP-1		04/27/21	5/4/2021
2105017-03	P-02		04/27/21 10:05 AM	5/4/2021
2105017-04	MW-15		04/27/21 10:30 AM	5/4/2021
2105017-05	MW-17		04/27/21 11:10 AM	5/4/2021
2105017-06	MW-18		04/27/21 12:15 PM	5/4/2021
2105017-07	MW-24		04/27/21 01:20 PM	5/4/2021
2105017-08	MW-08		04/28/21 08:25 AM	5/4/2021
2105017-09	MW-02		04/28/21 08:55 AM	5/4/2021
2105017-10	MW-20		04/28/21 09:20 AM	5/4/2021
2105017-11	MW-12		04/28/21 09:45 AM	5/4/2021
2105017-12	DUP-2		04/28/21	5/4/2021
2105017-13	DUP-3		04/28/21	5/4/2021

DHL Analytical, Inc.

13-May-21

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2105017-01A	EB-02	04/27/21 09:35 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-01B	EB-02	04/27/21 09:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	EB-02	04/27/21 09:35 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-01D	EB-02	04/27/21 09:35 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	EB-02	04/27/21 09:35 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	EB-02	04/27/21 09:35 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	EB-02	04/27/21 09:35 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-02A	DUP-1	04/27/21	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-02B	DUP-1	04/27/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	DUP-1	04/27/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-02D	DUP-1	04/27/21	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	DUP-1	04/27/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-1	04/27/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-1	04/27/21	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-03A	P-02	04/27/21 10:05 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-03B	P-02	04/27/21 10:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	P-02	04/27/21 10:05 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-03D	P-02	04/27/21 10:05 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	P-02	04/27/21 10:05 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	P-02	04/27/21 10:05 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	P-02	04/27/21 10:05 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-04A	MW-15	04/27/21 10:30 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-04B	MW-15	04/27/21 10:30 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-15	04/27/21 10:30 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-04D	MW-15	04/27/21 10:30 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-15	04/27/21 10:30 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-15	04/27/21 10:30 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-15	04/27/21 10:30 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2105017-05A	MW-17	04/27/21 11:10 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-05B	MW-17	04/27/21 11:10 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-17	04/27/21 11:10 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-05D	MW-17	04/27/21 11:10 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-17	04/27/21 11:10 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-17	04/27/21 11:10 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-17	04/27/21 11:10 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-06A	MW-18	04/27/21 12:15 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-06B	MW-18	04/27/21 12:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-18	04/27/21 12:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-18	04/27/21 12:15 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-06D	MW-18	04/27/21 12:15 PM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-18	04/27/21 12:15 PM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-18	04/27/21 12:15 PM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-07A	MW-24	04/27/21 01:20 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-07B	MW-24	04/27/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-24	04/27/21 01:20 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-07D	MW-24	04/27/21 01:20 PM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-24	04/27/21 01:20 PM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-24	04/27/21 01:20 PM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-24	04/27/21 01:20 PM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-08A	MW-08	04/28/21 08:25 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-08B	MW-08	04/28/21 08:25 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-08	04/28/21 08:25 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-08D	MW-08	04/28/21 08:25 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-08	04/28/21 08:25 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-08	04/28/21 08:25 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-09A	MW-02	04/28/21 08:55 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2105017-09B	MW-02	04/28/21 08:55 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-02	04/28/21 08:55 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-09D	MW-02	04/28/21 08:55 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-02	04/28/21 08:55 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-02	04/28/21 08:55 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-02	04/28/21 08:55 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-10A	MW-20	04/28/21 09:20 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-10B	MW-20	04/28/21 09:20 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-20	04/28/21 09:20 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-10D	MW-20	04/28/21 09:20 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-20	04/28/21 09:20 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-20	04/28/21 09:20 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-20	04/28/21 09:20 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-11A	MW-12	04/28/21 09:45 AM	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-11B	MW-12	04/28/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	MW-12	04/28/21 09:45 AM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-11D	MW-12	04/28/21 09:45 AM	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	MW-12	04/28/21 09:45 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-12	04/28/21 09:45 AM	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	MW-12	04/28/21 09:45 AM	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-12A	DUP-2	04/28/21	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461
2105017-12B	DUP-2	04/28/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	DUP-2	04/28/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-12D	DUP-2	04/28/21	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	DUP-2	04/28/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-2	04/28/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-2	04/28/21	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438
2105017-13A	DUP-3	04/28/21	Aqueous	SW5030C	Purge and Trap Water GC/MS	05/05/21 10:34 AM	100461

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2105017-13B	DUP-3	04/28/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
	DUP-3	04/28/21	Aqueous	SW3005A	Aq Prep Metals: Dissolved	05/07/21 07:56 AM	100487
2105017-13D	DUP-3	04/28/21	Aqueous	E300	Alkalinity Preparation	05/07/21 08:11 AM	100489
	DUP-3	04/28/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-3	04/28/21	Aqueous	E300	Anion Preparation	05/11/21 01:18 PM	100533
	DUP-3	04/28/21	Aqueous	M2540C	TDS Preparation	05/04/21 01:57 AM	100438

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2105017-01A	EB-02	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 12:52 PM	GCMS5_210505A
2105017-01B	EB-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 11:59 AM	ICP-MS4_210510A
	EB-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	100	05/10/21 02:27 PM	ICP-MS4_210510A
2105017-01D	EB-02	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 12:33 PM	TITRATOR_210507B
	EB-02	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 07:02 PM	IC2_210511A
	EB-02	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 12:54 AM	IC2_210511A
	EB-02	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-02A	DUP-1	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 01:43 PM	GCMS5_210505A
2105017-02B	DUP-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 12:01 PM	ICP-MS4_210510A
	DUP-1	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	100	05/10/21 02:29 PM	ICP-MS4_210510A
2105017-02D	DUP-1	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 01:06 PM	TITRATOR_210507B
	DUP-1	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 07:50 PM	IC2_210511A
	DUP-1	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 01:10 AM	IC2_210511A
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-03A	P-02	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 02:08 PM	GCMS5_210505A
2105017-03B	P-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 12:03 PM	ICP-MS4_210510A
	P-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:31 PM	ICP-MS4_210510A
2105017-03D	P-02	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 01:25 PM	TITRATOR_210507B
	P-02	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 08:38 PM	IC2_210511A
	P-02	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 01:26 AM	IC2_210511A
	P-02	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-04A	MW-15	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 02:34 PM	GCMS5_210505A
2105017-04B	MW-15	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	500	05/10/21 02:33 PM	ICP-MS4_210510A
	MW-15	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 12:05 PM	ICP-MS4_210510A
2105017-04D	MW-15	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 01:52 PM	TITRATOR_210507B
	MW-15	Aqueous	E300	Anions by IC method - Water	100533	1000	05/11/21 06:46 PM	IC2_210511A
	MW-15	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 08:54 PM	IC2_210511A
	MW-15	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2105017-05A	MW-17	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 02:59 PM	GCMS5_210505A
2105017-05B	MW-17	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 11:45 AM	ICP-MS4_210510A
	MW-17	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:13 PM	ICP-MS4_210510A
2105017-05D	MW-17	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 02:04 PM	TITRATOR_210507B
	MW-17	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 09:10 PM	IC2_210511A
	MW-17	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 01:42 AM	IC2_210511A
	MW-17	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-06A	MW-18	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 03:24 PM	GCMS5_210505A
2105017-06B	MW-18	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:12 PM	ICP-MS4_210510A
	MW-18	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	10	05/10/21 02:48 PM	ICP-MS4_210510A
	MW-18	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 04:25 PM	ICP-MS4_210510A
2105017-06D	MW-18	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 02:16 PM	TITRATOR_210507B
	MW-18	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 09:26 PM	IC2_210511A
	MW-18	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-07A	MW-24	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	20	05/05/21 01:17 PM	GCMS5_210505A
2105017-07B	MW-24	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:14 PM	ICP-MS4_210510A
	MW-24	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:50 PM	ICP-MS4_210510A
2105017-07D	MW-24	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 02:45 PM	TITRATOR_210507B
	MW-24	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 09:42 PM	IC2_210511A
	MW-24	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 01:58 AM	IC2_210511A
	MW-24	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-08A	MW-08	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 03:50 PM	GCMS5_210505A
2105017-08B	MW-08	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:16 PM	ICP-MS4_210510A
	MW-08	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:52 PM	ICP-MS4_210510A
2105017-08D	MW-08	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 03:03 PM	TITRATOR_210507B
	MW-08	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 09:58 PM	IC2_210511A
	MW-08	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-09A	MW-02	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 04:15 PM	GCMS5_210505A

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2105017-09B	MW-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:18 PM	ICP-MS4_210510A
	MW-02	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:54 PM	ICP-MS4_210510A
2105017-09D	MW-02	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 03:05 PM	TITRATOR_210507B
	MW-02	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 10:14 PM	IC2_210511A
	MW-02	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 02:14 AM	IC2_210511A
	MW-02	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-10A	MW-20	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 04:41 PM	GCMS5_210505A
2105017-10B	MW-20	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:20 PM	ICP-MS4_210510A
	MW-20	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:56 PM	ICP-MS4_210510A
2105017-10D	MW-20	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 03:27 PM	TITRATOR_210507B
	MW-20	Aqueous	E300	Anions by IC method - Water	100533	100	05/11/21 11:50 PM	IC2_210511A
	MW-20	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 03:50 AM	IC2_210511A
	MW-20	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-11A	MW-12	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 05:06 PM	GCMS5_210505A
2105017-11B	MW-12	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:22 PM	ICP-MS4_210510A
	MW-12	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 02:58 PM	ICP-MS4_210510A
2105017-11D	MW-12	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 03:44 PM	TITRATOR_210507B
	MW-12	Aqueous	E300	Anions by IC method - Water	100533	100	05/12/21 12:06 AM	IC2_210511A
	MW-12	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 04:06 AM	IC2_210511A
	MW-12	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-12A	DUP-2	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 05:31 PM	GCMS5_210505A
2105017-12B	DUP-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:24 PM	ICP-MS4_210510A
	DUP-2	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 03:00 PM	ICP-MS4_210510A
2105017-12D	DUP-2	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 04:11 PM	TITRATOR_210507B
	DUP-2	Aqueous	E300	Anions by IC method - Water	100533	100	05/12/21 12:22 AM	IC2_210511A
	DUP-2	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 04:22 AM	IC2_210511A
	DUP-2	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C
2105017-13A	DUP-3	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100461	1	05/05/21 05:57 PM	GCMS5_210505A

Lab Order: 2105017
Client: Larson & Associates
Project: Empire ABO

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2105017-13B	DUP-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	1	05/10/21 01:26 PM	ICP-MS4_210510A
	DUP-3	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100487	50	05/10/21 03:02 PM	ICP-MS4_210510A
2105017-13D	DUP-3	Aqueous	M2320 B	Alkalinity	100489	1	05/07/21 04:27 PM	TITRATOR_210507B
	DUP-3	Aqueous	E300	Anions by IC method - Water	100533	100	05/12/21 12:38 AM	IC2_210511A
	DUP-3	Aqueous	E300	Anions by IC method - Water	100533	10	05/12/21 04:38 AM	IC2_210511A
	DUP-3	Aqueous	M2540C	Total Dissolved Solids	100438	1	05/04/21 04:50 PM	WC_210504C

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	EB-02
Project:	Empire ABO	**Lab ID:**	2105017-01
Project No:	6-0141-06	**Collection Date:**	04/27/21 09:35 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	572	10.0	30.0		mg/L	100	05/10/21 02:27 PM
Dissolved Magnesium	298	10.0	30.0		mg/L	100	05/10/21 02:27 PM
Dissolved Potassium	9.81	0.100	0.300		mg/L	1	05/10/21 11:59 AM
Dissolved Sodium	161	10.0	30.0		mg/L	100	05/10/21 02:27 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 12:52 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 12:52 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 12:52 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 12:52 PM
Surr: 1,2-Dichloroethane-d4	102	0	72-119		%REC	1	05/05/21 12:52 PM
Surr: 4-Bromofluorobenzene	105	0	76-119		%REC	1	05/05/21 12:52 PM
Surr: Dibromofluoromethane	97.6	0	85-115		%REC	1	05/05/21 12:52 PM
Surr: Toluene-d8	108	0	81-120		%REC	1	05/05/21 12:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	114	3.00	10.0		mg/L	10	05/12/21 12:54 AM
Sulfate	2440	100	300		mg/L	100	05/11/21 07:02 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	281	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 12:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 12:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 12:33 PM
Alkalinity, Total (As CaCO3)	281	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 12:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4130	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	DUP-1
Project:	Empire ABO	**Lab ID:**	2105017-02
Project No:	6-0141-06	**Collection Date:**	04/27/21
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	582	10.0	30.0		mg/L	100	05/10/21 02:29 PM
Dissolved Magnesium	299	10.0	30.0		mg/L	100	05/10/21 02:29 PM
Dissolved Potassium	9.83	0.100	0.300		mg/L	1	05/10/21 12:01 PM
Dissolved Sodium	161	10.0	30.0		mg/L	100	05/10/21 02:29 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 01:43 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 01:43 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 01:43 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 01:43 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 01:43 PM
Surr: 4-Bromofluorobenzene	108	0	76-119		%REC	1	05/05/21 01:43 PM
Surr: Dibromofluoromethane	97.2	0	85-115		%REC	1	05/05/21 01:43 PM
Surr: Toluene-d8	109	0	81-120		%REC	1	05/05/21 01:43 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	112	3.00	10.0		mg/L	10	05/12/21 01:10 AM
Sulfate	2460	100	300		mg/L	100	05/11/21 07:50 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	275	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 01:06 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 01:06 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 01:06 PM
Alkalinity, Total (As CaCO3)	275	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 01:06 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4270	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	P-02
Project:	Empire ABO	**Lab ID:**	2105017-03
Project No:	6-0141-06	**Collection Date:**	04/27/21 10:05 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	638	5.00	15.0		mg/L	50	05/10/21 02:31 PM
Dissolved Magnesium	237	5.00	15.0		mg/L	50	05/10/21 02:31 PM
Dissolved Potassium	4.87	0.100	0.300		mg/L	1	05/10/21 12:03 PM
Dissolved Sodium	60.0	5.00	15.0		mg/L	50	05/10/21 02:31 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:08 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:08 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 02:08 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:08 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 02:08 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	05/05/21 02:08 PM
Surr: Dibromofluoromethane	95.9	0	85-115		%REC	1	05/05/21 02:08 PM
Surr: Toluene-d8	107	0	81-120		%REC	1	05/05/21 02:08 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	75.0	3.00	10.0		mg/L	10	05/12/21 01:26 AM
Sulfate	2030	100	300		mg/L	100	05/11/21 08:38 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	412	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 01:25 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 01:25 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 01:25 PM
Alkalinity, Total (As CaCO3)	412	20.0	20.0		mg/L @ pH 4.53	1	05/07/21 01:25 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3440	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-15
Project:	Empire ABO	**Lab ID:**	2105017-04
Project No:	6-0141-06	**Collection Date:**	04/27/21 10:30 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	556	50.0	150		mg/L	500	05/10/21 02:33 PM
Dissolved Magnesium	7070	50.0	150		mg/L	500	05/10/21 02:33 PM
Dissolved Potassium	261	50.0	150		mg/L	500	05/10/21 02:33 PM
Dissolved Sodium	9130	50.0	150		mg/L	500	05/10/21 02:33 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:34 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:34 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 02:34 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:34 PM
Surr: 1,2-Dichloroethane-d4	106	0	72-119		%REC	1	05/05/21 02:34 PM
Surr: 4-Bromofluorobenzene	111	0	76-119		%REC	1	05/05/21 02:34 PM
Surr: Dibromofluoromethane	97.6	0	85-115		%REC	1	05/05/21 02:34 PM
Surr: Toluene-d8	108	0	81-120		%REC	1	05/05/21 02:34 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	3200	30.0	100		mg/L	100	05/11/21 08:54 PM
Sulfate	47200	1000	3000		mg/L	1000	05/11/21 06:46 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	877	10.0	20.0		mg/L @ pH 4.55	1	05/07/21 01:52 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.55	1	05/07/21 01:52 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.55	1	05/07/21 01:52 PM
Alkalinity, Total (As CaCO3)	877	20.0	20.0		mg/L @ pH 4.55	1	05/07/21 01:52 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	106000	1000	1000		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-17
Project:	Empire ABO	**Lab ID:**	2105017-05
Project No:	6-0141-06	**Collection Date:**	04/27/21 11:10 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	539	5.00	15.0		mg/L	50	05/10/21 02:13 PM
Dissolved Magnesium	439	5.00	15.0		mg/L	50	05/10/21 02:13 PM
Dissolved Potassium	7.48	0.100	0.300		mg/L	1	05/10/21 11:45 AM
Dissolved Sodium	98.8	5.00	15.0		mg/L	50	05/10/21 02:13 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:59 PM
Ethylbenzene	0.000389	0.000300	0.00100	J	mg/L	1	05/05/21 02:59 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 02:59 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 02:59 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 02:59 PM
Surr: 4-Bromofluorobenzene	108	0	76-119		%REC	1	05/05/21 02:59 PM
Surr: Dibromofluoromethane	96.1	0	85-115		%REC	1	05/05/21 02:59 PM
Surr: Toluene-d8	109	0	81-120		%REC	1	05/05/21 02:59 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	98.5	3.00	10.0		mg/L	10	05/12/21 01:42 AM
Sulfate	2960	100	300		mg/L	100	05/11/21 09:10 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	252	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:04 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:04 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:04 PM
Alkalinity, Total (As CaCO3)	252	20.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:04 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4550	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-18
Project:	Empire ABO	**Lab ID:**	2105017-06
Project No:	6-0141-06	**Collection Date:**	04/27/21 12:15 PM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	832	5.00	15.0		mg/L	50	05/10/21 04:25 PM
Dissolved Magnesium	134	1.00	3.00		mg/L	10	05/10/21 02:48 PM
Dissolved Potassium	5.18	0.100	0.300		mg/L	1	05/10/21 01:12 PM
Dissolved Sodium	68.8	1.00	3.00		mg/L	10	05/10/21 02:48 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:24 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:24 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 03:24 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:24 PM
Surr: 1,2-Dichloroethane-d4	101	0	72-119		%REC	1	05/05/21 03:24 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	05/05/21 03:24 PM
Surr: Dibromofluoromethane	95.4	0	85-115		%REC	1	05/05/21 03:24 PM
Surr: Toluene-d8	109	0	81-120		%REC	1	05/05/21 03:24 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	651	30.0	100		mg/L	100	05/11/21 09:26 PM
Sulfate	1540	100	300		mg/L	100	05/11/21 09:26 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	250	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:16 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:16 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:16 PM
Alkalinity, Total (As CaCO3)	250	20.0	20.0		mg/L @ pH 4.53	1	05/07/21 02:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3330	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-24
Project:	Empire ABO	**Lab ID:**	2105017-07
Project No:	6-0141-06	**Collection Date:**	04/27/21 01:20 PM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	575	5.00	15.0		mg/L	50	05/10/21 02:50 PM
Dissolved Magnesium	751	5.00	15.0		mg/L	50	05/10/21 02:50 PM
Dissolved Potassium	8.29	0.100	0.300		mg/L	1	05/10/21 01:14 PM
Dissolved Sodium	82.7	5.00	15.0		mg/L	50	05/10/21 02:50 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	2.37	0.00600	0.0200		mg/L	20	05/05/21 01:17 PM
Ethylbenzene	0.180	0.00600	0.0200		mg/L	20	05/05/21 01:17 PM
Toluene	<0.0120	0.0120	0.0400		mg/L	20	05/05/21 01:17 PM
Total Xylenes	0.0876	0.00600	0.0200		mg/L	20	05/05/21 01:17 PM
Surr: 1,2-Dichloroethane-d4	99.1	0	72-119		%REC	20	05/05/21 01:17 PM
Surr: 4-Bromofluorobenzene	106	0	76-119		%REC	20	05/05/21 01:17 PM
Surr: Dibromofluoromethane	95.4	0	85-115		%REC	20	05/05/21 01:17 PM
Surr: Toluene-d8	110	0	81-120		%REC	20	05/05/21 01:17 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	87.0	3.00	10.0		mg/L	10	05/12/21 01:58 AM
Sulfate	3650	100	300		mg/L	100	05/11/21 09:42 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	702	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 02:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 02:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 02:45 PM
Alkalinity, Total (As CaCO3)	702	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	6220	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-08
Project:	Empire ABO	**Lab ID:**	2105017-08
Project No:	6-0141-06	**Collection Date:**	04/28/21 08:25 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	619	5.00	15.0		mg/L	50	05/10/21 02:52 PM
Dissolved Magnesium	140	5.00	15.0		mg/L	50	05/10/21 02:52 PM
Dissolved Potassium	9.05	0.100	0.300		mg/L	1	05/10/21 01:16 PM
Dissolved Sodium	283	5.00	15.0		mg/L	50	05/10/21 02:52 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:50 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:50 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 03:50 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 03:50 PM
Surr: 1,2-Dichloroethane-d4	101	0	72-119		%REC	1	05/05/21 03:50 PM
Surr: 4-Bromofluorobenzene	106	0	76-119		%REC	1	05/05/21 03:50 PM
Surr: Dibromofluoromethane	95.0	0	85-115		%REC	1	05/05/21 03:50 PM
Surr: Toluene-d8	108	0	81-120		%REC	1	05/05/21 03:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	530	30.0	100		mg/L	100	05/11/21 09:58 PM
Sulfate	1470	100	300		mg/L	100	05/11/21 09:58 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	420	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:03 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:03 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:03 PM
Alkalinity, Total (As CaCO3)	420	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:03 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3550	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-02
Project:	Empire ABO	**Lab ID:**	2105017-09
Project No:	6-0141-06	**Collection Date:**	04/28/21 08:55 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	513	5.00	15.0		mg/L	50	05/10/21 02:54 PM
Dissolved Magnesium	760	5.00	15.0		mg/L	50	05/10/21 02:54 PM
Dissolved Potassium	10.2	0.100	0.300		mg/L	1	05/10/21 01:18 PM
Dissolved Sodium	103	5.00	15.0		mg/L	50	05/10/21 02:54 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:15 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:15 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 04:15 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:15 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 04:15 PM
Surr: 4-Bromofluorobenzene	109	0	76-119		%REC	1	05/05/21 04:15 PM
Surr: Dibromofluoromethane	96.2	0	85-115		%REC	1	05/05/21 04:15 PM
Surr: Toluene-d8	108	0	81-120		%REC	1	05/05/21 04:15 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	77.7	3.00	10.0		mg/L	10	05/12/21 02:14 AM
Sulfate	6670	100	300		mg/L	100	05/11/21 10:14 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.01	1	05/07/21 03:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.01	1	05/07/21 03:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.01	1	05/07/21 03:05 PM
Alkalinity, Total (As CaCO3)	<20.0	20.0	20.0		mg/L @ pH 4.01	1	05/07/21 03:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	9370	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-20
Project:	Empire ABO	**Lab ID:**	2105017-10
Project No:	6-0141-06	**Collection Date:**	04/28/21 09:20 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	642	5.00	15.0		mg/L	50	05/10/21 02:56 PM
Dissolved Magnesium	131	5.00	15.0		mg/L	50	05/10/21 02:56 PM
Dissolved Potassium	5.57	0.100	0.300		mg/L	1	05/10/21 01:20 PM
Dissolved Sodium	275	5.00	15.0		mg/L	50	05/10/21 02:56 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:41 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:41 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 04:41 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 04:41 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 04:41 PM
Surr: 4-Bromofluorobenzene	108	0	76-119		%REC	1	05/05/21 04:41 PM
Surr: Dibromofluoromethane	96.9	0	85-115		%REC	1	05/05/21 04:41 PM
Surr: Toluene-d8	107	0	81-120		%REC	1	05/05/21 04:41 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	159	3.00	10.0		mg/L	10	05/12/21 03:50 AM
Sulfate	1920	100	300		mg/L	100	05/11/21 11:50 PM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	456	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:27 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:27 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:27 PM
Alkalinity, Total (As CaCO3)	456	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 03:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3500	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-12
Project:	Empire ABO	**Lab ID:**	2105017-11
Project No:	6-0141-06	**Collection Date:**	04/28/21 09:45 AM
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	595	5.00	15.0		mg/L	50	05/10/21 02:58 PM
Dissolved Magnesium	392	5.00	15.0		mg/L	50	05/10/21 02:58 PM
Dissolved Potassium	5.47	0.100	0.300		mg/L	1	05/10/21 01:22 PM
Dissolved Sodium	103	5.00	15.0		mg/L	50	05/10/21 02:58 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:06 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:06 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 05:06 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:06 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	05/05/21 05:06 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	05/05/21 05:06 PM
Surr: Dibromofluoromethane	95.2	0	85-115		%REC	1	05/05/21 05:06 PM
Surr: Toluene-d8	110	0	81-120		%REC	1	05/05/21 05:06 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	94.9	3.00	10.0		mg/L	10	05/12/21 04:06 AM
Sulfate	2700	100	300		mg/L	100	05/12/21 12:06 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	336	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 03:44 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 03:44 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 03:44 PM
Alkalinity, Total (As CaCO3)	336	20.0	20.0		mg/L @ pH 4.53	1	05/07/21 03:44 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4510	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	DUP-2
Project:	Empire ABO	**Lab ID:**	2105017-12
Project No:	6-0141-06	**Collection Date:**	04/28/21
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	628	5.00	15.0		mg/L	50	05/10/21 03:00 PM
Dissolved Magnesium	142	5.00	15.0		mg/L	50	05/10/21 03:00 PM
Dissolved Potassium	9.23	0.100	0.300		mg/L	1	05/10/21 01:24 PM
Dissolved Sodium	286	5.00	15.0		mg/L	50	05/10/21 03:00 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:31 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:31 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 05:31 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:31 PM
Surr: 1,2-Dichloroethane-d4	101	0	72-119		%REC	1	05/05/21 05:31 PM
Surr: 4-Bromofluorobenzene	107	0	76-119		%REC	1	05/05/21 05:31 PM
Surr: Dibromofluoromethane	95.4	0	85-115		%REC	1	05/05/21 05:31 PM
Surr: Toluene-d8	108	0	81-120		%REC	1	05/05/21 05:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	494	30.0	100		mg/L	100	05/12/21 12:22 AM
Sulfate	1470	100	300		mg/L	100	05/12/21 12:22 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	429	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 04:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 04:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	05/07/21 04:11 PM
Alkalinity, Total (As CaCO3)	429	20.0	20.0		mg/L @ pH 4.54	1	05/07/21 04:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3560	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	DUP-3
Project:	Empire ABO	**Lab ID:**	2105017-13
Project No:	6-0141-06	**Collection Date:**	04/28/21
Lab Order:	2105017	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **RO**
Dissolved Calcium	584	5.00	15.0		mg/L	50	05/10/21 03:02 PM
Dissolved Magnesium	376	5.00	15.0		mg/L	50	05/10/21 03:02 PM
Dissolved Potassium	5.53	0.100	0.300		mg/L	1	05/10/21 01:26 PM
Dissolved Sodium	102	5.00	15.0		mg/L	50	05/10/21 03:02 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:57 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:57 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	05/05/21 05:57 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	05/05/21 05:57 PM
Surr: 1,2-Dichloroethane-d4	101	0	72-119		%REC	1	05/05/21 05:57 PM
Surr: 4-Bromofluorobenzene	106	0	76-119		%REC	1	05/05/21 05:57 PM
Surr: Dibromofluoromethane	94.9	0	85-115		%REC	1	05/05/21 05:57 PM
Surr: Toluene-d8	109	0	81-120		%REC	1	05/05/21 05:57 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	105	3.00	10.0		mg/L	10	05/12/21 04:38 AM
Sulfate	2640	100	300		mg/L	100	05/12/21 12:38 AM
ALKALINITY		**M2320 B**					Analyst: **BM**
Alkalinity, Bicarbonate (As CaCO3)	336	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 04:27 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 04:27 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.53	1	05/07/21 04:27 PM
Alkalinity, Total (As CaCO3)	336	20.0	20.0		mg/L @ pH 4.53	1	05/07/21 04:27 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	4370	50.0	50.0		mg/L	1	05/04/21 04:50 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *13-May-21*

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210510A

The QC data in batch 100487 applies to the following samples: 2105017-01B, 2105017-02B, 2105017-03B, 2105017-04B, 2105017-05B, 2105017-06B, 2105017-07B, 2105017-08B, 2105017-09B, 2105017-10B, 2105017-11B, 2105017-12B, 2105017-13B

Sample ID: **MB-100487** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:35:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	<0.100	0.300								
Dissolved Magnesium	<0.100	0.300								
Dissolved Potassium	<0.100	0.300								
Dissolved Sodium	<0.100	0.300								

Sample ID: **MB-100454-FILTER** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:37:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	<0.100	0.300								
Dissolved Magnesium	<0.100	0.300								
Dissolved Potassium	<0.100	0.300								
Dissolved Sodium	<0.100	0.300								

Sample ID: **LCS-100487** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:39:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	4.97	0.300	5.00	0	99.5	80	120			
Dissolved Magnesium	4.97	0.300	5.00	0	99.4	80	120			
Dissolved Potassium	5.03	0.300	5.00	0	101	80	120			
Dissolved Sodium	5.00	0.300	5.00	0	100	80	120			

Sample ID: **LCSD-100487** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:41:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.20	0.300	5.00	0	104	80	120	4.55	15	
Dissolved Magnesium	5.04	0.300	5.00	0	101	80	120	1.44	15	
Dissolved Potassium	5.11	0.300	5.00	0	102	80	120	1.58	15	
Dissolved Sodium	5.08	0.300	5.00	0	102	80	120	1.46	15	

Sample ID: **2105017-05B SD** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:47:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	7.49	1.50	0	7.48				0.257	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210510A

Sample ID: **2105017-05B PDS** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 12:13:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	12.2	0.300	5.00	7.48	93.8	75	125			

Sample ID: **2105017-05B MS** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 12:15:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	526	0.300	5.00	527	-15.7	75	125			S
Dissolved Magnesium	441	0.300	5.00	439	31.9	75	125			S
Dissolved Potassium	12.4	0.300	5.00	7.48	99.1	75	125			
Dissolved Sodium	105	0.300	5.00	100	99.5	75	125			

Sample ID: **2105017-05B MSD** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 12:17:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	532	0.300	5.00	527	106	75	125	1.15	15	
Dissolved Magnesium	443	0.300	5.00	439	88.6	75	125	0.641	15	
Dissolved Potassium	12.7	0.300	5.00	7.48	104	75	125	1.82	15	
Dissolved Sodium	107	0.300	5.00	100	128	75	125	1.36	15	S

Sample ID: **2105017-05B SD** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 2:15:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	540	75.0	0	539				0.234	20	
Magnesium	449	75.0	0	439				2.30	20	
Sodium	107	75.0	0	98.8				8.01	20	

Sample ID: **2105017-05B PDS** Batch ID: **100487** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 2:35:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	803	15.0	250	539	106	75	125			
Magnesium	672	15.0	250	439	93.0	75	125			
Sodium	345	15.0	250	98.8	98.3	75	125			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210510A

Sample ID: **ICV-210510** Batch ID: **R115306** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:12:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	2.66	0.300	2.50	0	106	90	110			
Dissolved Magnesium	2.44	0.300	2.50	0	97.5	90	110			
Dissolved Potassium	2.50	0.300	2.50	0	100	90	110			
Dissolved Sodium	2.54	0.300	2.50	0	102	90	110			

Sample ID: **LCVL-210510** Batch ID: **R115306** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 11:21:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	0.0975	0.300	0.100	0	97.5	80	120			
Dissolved Magnesium	0.101	0.300	0.100	0	101	80	120			
Dissolved Potassium	0.101	0.300	0.100	0	101	80	120			
Dissolved Sodium	0.100	0.300	0.100	0	100	80	120			

Sample ID: **CCV1-210510** Batch ID: **R115306** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 12:27:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.19	0.300	5.00	0	104	90	110			
Dissolved Magnesium	4.88	0.300	5.00	0	97.6	90	110			
Dissolved Potassium	5.02	0.300	5.00	0	100	90	110			
Dissolved Sodium	5.01	0.300	5.00	0	100	90	110			

Sample ID: **CCV2-210510** Batch ID: **R115306** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 1:36:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.13	0.300	5.00	0	103	90	110			
Dissolved Magnesium	4.84	0.300	5.00	0	96.8	90	110			
Dissolved Potassium	5.04	0.300	5.00	0	101	90	110			
Dissolved Sodium	4.89	0.300	5.00	0	97.7	90	110			

Sample ID: **CCV3-210510** Batch ID: **R115306** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_210510A** Analysis Date: **5/10/2021 2:37:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.18	0.300	5.00	0	104	90	110			
Dissolved Magnesium	4.84	0.300	5.00	0	96.8	90	110			
Dissolved Potassium	5.05	0.300	5.00	0	101	90	110			
Dissolved Sodium	4.83	0.300	5.00	0	96.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210510A

Sample ID: **CCV4-210510**	Batch ID: **R115306**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210510A**	Analysis Date: **5/10/2021 3:04:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.04	0.300	5.00	0	101	90	110			
Dissolved Magnesium	4.84	0.300	5.00	0	96.8	90	110			
Dissolved Potassium	5.03	0.300	5.00	0	101	90	110			
Dissolved Sodium	4.85	0.300	5.00	0	96.9	90	110			

Sample ID: **CCV6-210510**	Batch ID: **R115306**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210510A**	Analysis Date: **5/10/2021 4:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.12	0.300	5.00	0	102	90	110			

Sample ID: **CCV7-210510**	Batch ID: **R115306**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_210510A**	Analysis Date: **5/10/2021 4:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	5.03	0.300	5.00	0	101	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_210505A

The QC data in batch 100461 applies to the following samples: 2105017-01A, 2105017-02A, 2105017-03A, 2105017-04A, 2105017-05A, 2105017-06A, 2105017-07A, 2105017-08A, 2105017-09A, 2105017-10A, 2105017-11A, 2105017-12A, 2105017-13A

Sample ID: **LCS-100461** Batch ID: **100461** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 11:36:00 AM** Prep Date: **5/5/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0196	0.00100	0.0232	0	84.3	81	122			
Ethylbenzene	0.0218	0.00100	0.0232	0	94.2	80	120			
Toluene	0.0196	0.00200	0.0232	0	84.5	80	120			
Total Xylenes	0.0663	0.00100	0.0696	0	95.3	80	120			
Surr: 1,2-Dichloroethane-d4	199		200.0		99.6	72	119			
Surr: 4-Bromofluorobenzene	203		200.0		101	76	119			
Surr: Dibromofluoromethane	192		200.0		96.1	85	115			
Surr: Toluene-d8	216		200.0		108	81	120			

Sample ID: **MB-100461** Batch ID: **100461** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 12:26:00 PM** Prep Date: **5/5/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Total Xylenes	<0.000300	0.00100								
Surr: 1,2-Dichloroethane-d4	200		200.0		99.8	72	119			
Surr: 4-Bromofluorobenzene	209		200.0		104	76	119			
Surr: Dibromofluoromethane	191		200.0		95.6	85	115			
Surr: Toluene-d8	219		200.0		110	81	120			

Sample ID: **2105017-07AMS** Batch ID: **100461** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 6:48:00 PM** Prep Date: **5/5/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.99	0.0200	0.464	2.37	132	81	122			S
Ethylbenzene	0.668	0.0200	0.464	0.180	105	80	120			
Toluene	0.427	0.0400	0.464	0	92.0	80	120			
Total Xylenes	1.54	0.0200	1.39	0.0876	104	80	120			
Surr: 1,2-Dichloroethane-d4	4000		4000		100	72	119			
Surr: 4-Bromofluorobenzene	4040		4000		101	76	119			
Surr: Dibromofluoromethane	3870		4000		96.7	85	115			
Surr: Toluene-d8	4290		4000		107	81	120			

Sample ID: **2105017-07AMSD** Batch ID: **100461** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 7:13:00 PM** Prep Date: **5/5/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_210505A

Sample ID: **2105017-07AMSD** Batch ID: **100461** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 7:13:00 PM** Prep Date: **5/5/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	2.97	0.0200	0.464	2.37	128	81	122	0.638	20	S
Ethylbenzene	0.616	0.0200	0.464	0.180	94.0	80	120	8.07	20	
Toluene	0.373	0.0400	0.464	0	80.4	80	120	13.4	20	
Total Xylenes	1.38	0.0200	1.39	0.0876	92.5	80	120	11.4	20	
Surr: 1,2-Dichloroethane-d4	4000		4000		100	72	119	0	0	
Surr: 4-Bromofluorobenzene	4020		4000		101	76	119	0	0	
Surr: Dibromofluoromethane	3820		4000		95.4	85	115	0	0	
Surr: Toluene-d8	4260		4000		107	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_210505A

Sample ID: **ICV-210505** Batch ID: **R115237** TestNo: **SW8260D** Units: **mg/L**
SampType: **ICV** Run ID: **GCMS5_210505A** Analysis Date: **5/5/2021 11:11:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0438	0.00100	0.0464	0	94.3	70	130			
Ethylbenzene	0.0476	0.00100	0.0464	0	103	70	130			
Toluene	0.0428	0.00200	0.0464	0	92.2	70	130			
Total Xylenes	0.142	0.00100	0.139	0	102	70	130			
Surr: 1,2-Dichloroethane-d4	200		200.0		99.8	72	119			
Surr: 4-Bromofluorobenzene	203		200.0		101	76	119			
Surr: Dibromofluoromethane	196		200.0		98.2	85	115			
Surr: Toluene-d8	213		200.0		107	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210511A

The QC data in batch 100533 applies to the following samples: 2105017-01D, 2105017-02D, 2105017-03D, 2105017-04D, 2105017-05D, 2105017-06D, 2105017-07D, 2105017-08D, 2105017-09D, 2105017-10D, 2105017-11D, 2105017-12D, 2105017-13D

Sample ID: **MB-100533** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 5:58:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00								
Sulfate	<1.00	3.00								

Sample ID: **LCS-100533** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 6:14:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.51	1.00	10.00	0	95.1	90	110			
Sulfate	29.5	3.00	30.00	0	98.3	90	110			

Sample ID: **LCSD-100533** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 6:30:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.39	1.00	10.00	0	93.9	90	110	1.28	20	
Sulfate	29.3	3.00	30.00	0	97.8	90	110	0.493	20	

Sample ID: **2105017-01DMS** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 7:18:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2140	100	2000	152.8	99.2	90	110			
Sulfate	4400	300	2000	2443	97.8	90	110			

Sample ID: **2105017-01DMSD** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 7:34:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2110	100	2000	152.8	97.9	90	110	1.25	20	
Sulfate	4380	300	2000	2443	97.0	90	110	0.341	20	

Sample ID: **2105017-02DMS** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 8:06:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2120	100	2000	165.0	97.9	90	110			
Sulfate	4500	300	2000	2460	102	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210511A

Sample ID: **2105017-02DMSD** Batch ID: **100533** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210511A** Analysis Date: **5/11/2021 8:22:51 PM** Prep Date: **5/11/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2110	100	2000	165.0	97.1	90	110	0.750	20	
Sulfate	4470	300	2000	2460	100	90	110	0.721	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210511A

Sample ID: **ICV-210511**	Batch ID: **R115331**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_210511A**	Analysis Date: **5/11/2021 5:26:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	24.8	1.00	25.00	0	99.3	90	110			
Sulfate	77.0	3.00	75.00	0	103	90	110			

Sample ID: **CCV1-210511**	Batch ID: **R115331**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210511A**	Analysis Date: **5/11/2021 11:18:51 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.50	1.00	10.00	0	95.0	90	110			
Sulfate	29.5	3.00	30.00	0	98.5	90	110			

Sample ID: **CCV2-210511**	Batch ID: **R115331**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210511A**	Analysis Date: **5/12/2021 3:18:51 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.54	1.00	10.00	0	95.4	90	110			
Sulfate	29.8	3.00	30.00	0	99.3	90	110			

Sample ID: **CCV3-210511**	Batch ID: **R115331**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210511A**	Analysis Date: **5/12/2021 5:42:51 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.50	1.00	10.00	0	95.0	90	110			
Sulfate	29.6	3.00	30.00	0	98.6	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_210507B

The QC data in batch 100489 applies to the following samples: 2105017-01D, 2105017-02D, 2105017-03D, 2105017-04D, 2105017-05D, 2105017-06D, 2105017-07D, 2105017-08D, 2105017-09D, 2105017-10D, 2105017-11D, 2105017-12D, 2105017-13D

Sample ID: **MB-100489** Batch ID: **100489** TestNo: **M2320 B** Units: **mg/L @ pH 4.28**
SampType: **MBLK** Run ID: **TITRATOR_210507B** Analysis Date: **5/7/2021 10:16:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-100489** Batch ID: **100489** TestNo: **M2320 B** Units: **mg/L @ pH 4.19**
SampType: **LCS** Run ID: **TITRATOR_210507B** Analysis Date: **5/7/2021 10:21:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.3	20.0	50.00	0	111	74	129			

Sample ID: **LCSD-100489** Batch ID: **100489** TestNo: **M2320 B** Units: **mg/L @ pH 4.23**
SampType: **LCSD** Run ID: **TITRATOR_210507B** Analysis Date: **5/7/2021 10:25:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	55.6	20.0	50.00	0	111	74	129	0.577	20	

Sample ID: **2105016-01D-DUP** Batch ID: **100489** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_210507B** Analysis Date: **5/7/2021 11:19:00 AM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	255	20.0	0	258.5				1.48	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	255	20.0	0	258.5				1.48	20	

Sample ID: **2105017-01D-DUP** Batch ID: **100489** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_210507B** Analysis Date: **5/7/2021 12:47:00 PM** Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	278	20.0	0	280.7				0.859	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	278	20.0	0	280.7				0.859	20	

Qualifiers:				
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_210507B

Sample ID: **ICV-210507**	Batch ID: **R115296**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.2**
SampType: **ICV**	Run ID: **TITRATOR_210507B**	Analysis Date: **5/7/2021 10:14:00 AM**	Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	11.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	90.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID: **CCV1-210507**	Batch ID: **R115296**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.41**
SampType: **CCV**	Run ID: **TITRATOR_210507B**	Analysis Date: **5/7/2021 12:53:00 PM**	Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	23.9	20.0	0							
Alkalinity, Carbonate (As CaCO3)	77.9	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	90	110			

Sample ID: **CCV2-210507**	Batch ID: **R115296**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.39**
SampType: **CCV**	Run ID: **TITRATOR_210507B**	Analysis Date: **5/7/2021 3:50:00 PM**	Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	79.7	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.8	20.0	100.0	0	99.8	90	110			

Sample ID: **CCV3-210507**	Batch ID: **R115296**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.4**
SampType: **CCV**	Run ID: **TITRATOR_210507B**	Analysis Date: **5/7/2021 4:33:00 PM**	Prep Date: **5/7/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.4	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2105017
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: **WC_210504C**

The QC data in batch 100438 applies to the following samples: 2105017-01D, 2105017-02D, 2105017-03D, 2105017-04D, 2105017-05D, 2105017-06D, 2105017-07D, 2105017-08D, 2105017-09D, 2105017-10D, 2105017-11D, 2105017-12D, 2105017-13D

Sample ID: **MB-100438** Batch ID: **100438** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_210504C** Analysis Date: **5/4/2021 4:50:00 PM** Prep Date: **5/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100438** Batch ID: **100438** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_210504C** Analysis Date: **5/4/2021 4:50:00 PM** Prep Date: **5/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	772	10.0	745.6	0	104	90	113			

Sample ID: **2105017-08D-DUP** Batch ID: **100438** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210504C** Analysis Date: **5/4/2021 4:50:00 PM** Prep Date: **5/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	3470	50.0	0	3545				2.14	5	

Sample ID: **2105017-09D-DUP** Batch ID: **100438** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_210504C** Analysis Date: **5/4/2021 4:50:00 PM** Prep Date: **5/4/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	9360	50.0	0	9370				0.160	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL ANALYTICAL

June 28, 2021

Mark Larson
Larson & Associates
507 N. Marienfeld #202
Midland, TX 79701
TEL: (432) 687-0901
FAX (432) 687-0456

Order No.: 2106140

RE: Empire ABO

Dear Mark Larson:

DHL Analytical, Inc. received 1 sample(s) on 6/19/2021 for the analyses presented in the following report.

There were no problems with the analyses and all data met requirements of NELAP except where noted in the Case Narrative. All non-NELAP methods will be identified accordingly in the case narrative and all estimated uncertainties of test results are within method or EPA specifications.

If you have any questions regarding these tests results, please feel free to call. Thank you for using DHL Analytical.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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№ 1596

CHAIN-OF-CUSTOD

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202
Midland, TX 79701
432-687-0901

DATE: 6/18/2021 PAGE 1 OF 1

PO#: _____ LAB WORK ORDER#: 2106140

PROJECT LOCATION OR NAME: Empire ABO

LAI PROJECT #: 6-01411-0C COLLECTOR: MB

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

PRESERVATION: HCl x3 | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE x2 | UNPRESSERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☒ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDES ☒ ANIONS ☐ ALKALINITY ☒ | Na, Ca, Mg, K, SO4

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl x3	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE x2	UNPRESSERVED	BTEX ☒	TDS ☒	CHLORIDES ☒	Na, Ca, Mg, K, SO4	FIELD NOTES
MW-22	01	6/15/21	1302	W	5	X			X		X	X	X	X	Lab Filter
TOTAL															

RELINQUISHED BY:(Signature) DATE/TIME 6/18/21 1430 RECEIVED BY: (Signature) LSO

RELINQUISHED BY:(Signature) LSO DATE/TIME 6/19/21 1028 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: DHL

3

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.8°C THERM#: 78
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☐ CARRIER BILL # _____
☐ HAND DELIVERED Via LSO

129918 AF

2A

2B

LSO

WWW.LSO.COM
Questions? Call 800-800-8984

Airbill No. LSO0BYH3

LSO0BYH3

1. To: Print Name (Person): John DuPont Phone (Important): 512-387-8222

Company Name: DHL Analytical

Street Address (No P.O. Box or P.O. Box Zip Code Deliveries): 2300 Double Creek DR

Suite / Floor:

City: Round Rock State: TX Zip: 78664

2. From: Print Name (Person): John White Phone (Important): 432-687-0901

Company Name: LARSON & ASSOCIATES

Street Address: 507 NORTH MARIENFELD

Suite / Floor: 205

City: MIDLAND State: TX Zip: 79701

3. Service: Visit www.lso.com for availability of services to your destination and enjoy added features by creating your shipping label online.

- [ ] **LSO Priority Overnight*** By 10:30 a.m. to most cities
- [ ] **LSO Early Overnight*** By 8:30 a.m. select cities
- [ ] **LSO Economy Next Day*** By 3 p.m. to most cities
- [ ] **LSO 2nd Day***
- [ ] **LSO Ground**
- [x] **LSO Saturday***
- [ ] Other _____

*Check commitment times and availability at www.lso.com

Assumed LSO Priority Overnight service unless otherwise noted.

- [ ] Deliver Without Delivery Signature (See Limits of Liability below)

Release Signature

L_____ x W_____ x H_____

4. Package: Weight: 40

Your Company's Billing Reference Information

Ship Date: (mm/dd/yy) 06 / 18 / 21

5. Payment:

FOR DRIVER USE ONLY

Driver Number 1

- [ ] Check here if LSO Supplies are used with LSO Ground Service.

Pick-up Location _____

Date: 6-18-21

Time: _____

City Code: AUS

ILLEGIBLE HANDWRITING ON AIRBILL MAY DELAY TRANSIT TIMES OR RESULT IN NON-DELIVERY. LIMIT OF LIABILITY: We are not responsible for claims in excess of $100 for any reason unless you: 1) declare a greater value (not to exceed $25,000); 2) pay an additional fee; 3) and document your actual loss in a timely manner. We will not pay any claim in excess of the actual loss. We are not liable for any special or consequential damages. If you ask us to deliver a package without obtaining a delivery signature, you release us of all liability for claims resulting from such service. "Signature Required" service is only available when printing a label online at LSO.com. **NO DELIVERY SIGNATURE WILL BE OBTAINED FOR LSO EARLY OVERNIGHT SERVICE. Packaging provided by LSO is for EXPRESS USE ONLY – NEVER TO BE USED FOR LSO GROUND Service. OVERSIZE RATES MAY APPLY. DELIVERY COMMITMENTS MAY VARY. ADDITIONAL FEES MAY APPLY.** See LSO Service Guide for further details.

CUSTODY SEAL

DHL ANALYTICAL

DATE 6/18/2021

SIGNATURE

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Larson & Associates** Date Received: **6/21/2021**

Work Order Number **2106140** Received by: **RA**

Checklist completed by: _____ 6/21/2021 Reviewed by _____ 6/21/2021
Signature Date Initials Date

Carrier name: LoneStar

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**1.8** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted? _____		Checked by _____

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *28-Jun-21*

CLIENT: Larson & Associates
Project: Empire ABO
Lab Order: 2106140

CASE NARRATIVE

Sample was analyzed using the methods outlined in the following references:

Method E300 - Anions Analysis
Method SW6020B - Metals Analysis
Method SW8260D - Volatile Organics Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

LOG IN

The sample was received and log-in performed on 6/19/21. A total of 1 sample was received. The sample was collected in Mountain Standard Time. The sample arrived in good condition and was properly packaged.

VOLATILE ORGANICS ANALYSIS

For Volatiles analysis the sample was diluted prior to analysis due to the nature of the sample (concentration of target compounds).

METALS ANALYSIS

For Metals analysis performed on 6/23/21 the matrix spike and matrix spike duplicate recoveries were above control limits for Calcium and Magnesium. These are flagged accordingly in the QC summary report. The reference sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analyte. No further corrective actions were taken.

For Metals analysis performed on 6/23/21 the PDS recovery was below control limits for Magnesium and Potassium. These are flagged accordingly. The serial dilution was within control limits for these analytes. No further corrective actions were taken.

ANIONS ANALYSIS

For Anions analysis performed on 6/25/21 the matix spikes and matrix spike duplicates (2106127-11 MS/MSD & 2106140-01 MS/MSD) were below control limits for Chloride or Sulfate. These are flagged accordingly in the QC summary report. The reference sample selected for the matrix spike and matrix spike duplicate (2106127-11 MS/MSD) was not from this work order. The reference sample selected for the matrix spike and matrix spike duplicate (2106140-01 MS/MSD) was from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *28-Jun-21*

CLIENT: Larson & Associates
Project: Empire ABO
Lab Order: 2106140

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
2106140-01	MW-22		06/15/21 01:02 PM	6/19/2021

DHL Analytical, Inc.

28-Jun-21

Lab Order: 2106140
Client: Larson & Associates
Project: Empire ABO

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
2106140-01A	MW-22	06/15/21 01:02 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	06/22/21 09:40 AM	100985
	MW-22	06/15/21 01:02 PM	Aqueous	SW5030C	Purge and Trap Water GC/MS	06/22/21 09:40 AM	100985
2106140-01B	MW-22	06/15/21 01:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/22/21 09:13 AM	100984
	MW-22	06/15/21 01:02 PM	Aqueous	SW3005A	Aq Prep Metals: Dissolved	06/22/21 09:13 AM	100984
2106140-01D	MW-22	06/15/21 01:02 PM	Aqueous	E300	Alkalinity Preparation	06/22/21 08:58 AM	100979
	MW-22	06/15/21 01:02 PM	Aqueous	E300	Anion Preparation	06/25/21 09:00 AM	101035
	MW-22	06/15/21 01:02 PM	Aqueous	E300	Anion Preparation	06/25/21 09:00 AM	101035
	MW-22	06/15/21 01:02 PM	Aqueous	E300	Anion Preparation	06/24/21 09:44 AM	101019
	MW-22	06/15/21 01:02 PM	Aqueous	E300	Anion Preparation	06/24/21 09:44 AM	101019
	MW-22	06/15/21 01:02 PM	Aqueous	M2540C	TDS Preparation	06/21/21 09:12 AM	100962

DHL Analytical, Inc.

28-Jun-21

Lab Order: 2106140
Client: Larson & Associates
Project: Empire ABO

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
2106140-01A	MW-22	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100985	50	06/23/21 10:48 AM	GCMS3_210622A
	MW-22	Aqueous	SW8260D	8260 Water Volatiles by GC/MS	100985	20	06/22/21 06:33 PM	GCMS3_210622A
2106140-01B	MW-22	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100984	1	06/23/21 02:57 PM	ICP-MS5_210623B
	MW-22	Aqueous	SW6020B	Metals-ICPMS (0.45µ filtered)	100984	50	06/23/21 04:01 PM	ICP-MS4_210623A
2106140-01D	MW-22	Aqueous	M2320 B	Alkalinity	100979	1	06/22/21 03:57 PM	TITRATOR_210622A
	MW-22	Aqueous	E300	Anions by IC method - Water	101019	10	06/24/21 11:24 PM	IC4_210624A
	MW-22	Aqueous	E300	Anions by IC method - Water	101019	100	06/24/21 06:58 PM	IC4_210624A
	MW-22	Aqueous	E300	Anions by IC method - Water	101035	10	06/25/21 05:46 PM	IC2_210625A
	MW-22	Aqueous	E300	Anions by IC method - Water	101035	100	06/25/21 03:36 PM	IC2_210625A
	MW-22	Aqueous	M2540C	Total Dissolved Solids	100962	1	06/21/21 02:10 PM	WC_210621B

DHL Analytical, Inc.

Date: *28-Jun-21*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-22
Project:	Empire ABO	**Lab ID:**	2106140-01
Project No:	6-0141-06	**Collection Date:**	06/15/21 01:02 PM
Lab Order:	2106140	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
METALS-ICPMS (0.45µ FILTERED)		**SW6020B**					Analyst: **SP**
Dissolved Calcium	664	5.00	15.0		mg/L	50	06/23/21 04:01 PM
Dissolved Magnesium	227	5.00	15.0		mg/L	50	06/23/21 04:01 PM
Dissolved Potassium	4.42	0.100	0.300		mg/L	1	06/23/21 02:57 PM
Dissolved Sodium	73.3	5.00	15.0		mg/L	50	06/23/21 04:01 PM
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	5.63	0.0150	0.0500		mg/L	50	06/23/21 10:48 AM
Ethylbenzene	0.320	0.00600	0.0200		mg/L	20	06/22/21 06:33 PM
Toluene	<0.0120	0.0120	0.0400		mg/L	20	06/22/21 06:33 PM
Total Xylenes	0.217	0.00600	0.0200		mg/L	20	06/22/21 06:33 PM
Surr: 1,2-Dichloroethane-d4	98.3	0	72-119		%REC	50	06/23/21 10:48 AM
Surr: 1,2-Dichloroethane-d4	96.5	0	72-119		%REC	20	06/22/21 06:33 PM
Surr: 4-Bromofluorobenzene	99.8	0	76-119		%REC	50	06/23/21 10:48 AM
Surr: 4-Bromofluorobenzene	101	0	76-119		%REC	20	06/22/21 06:33 PM
Surr: Dibromofluoromethane	104	0	85-115		%REC	50	06/23/21 10:48 AM
Surr: Dibromofluoromethane	103	0	85-115		%REC	20	06/22/21 06:33 PM
Surr: Toluene-d8	103	0	81-120		%REC	50	06/23/21 10:48 AM
Surr: Toluene-d8	103	0	81-120		%REC	20	06/22/21 06:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **BM**
Chloride	78.1	3.00	10.0		mg/L	10	06/25/21 05:46 PM
Sulfate	1850	100	300		mg/L	100	06/25/21 03:36 PM
ALKALINITY		**M2320 B**					Analyst: **BTJ**
Alkalinity, Bicarbonate (As CaCO3)	748	10.0	20.0		mg/L @ pH 4.54	1	06/22/21 03:57 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/22/21 03:57 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.54	1	06/22/21 03:57 PM
Alkalinity, Total (As CaCO3)	748	20.0	20.0		mg/L @ pH 4.54	1	06/22/21 03:57 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **JS**
Total Dissolved Solids (Residue, Filterable)	3740	50.0	50.0		mg/L	1	06/21/21 02:10 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *28-Jun-21*

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: **ICP-MS4_210623A**

The QC data in batch 100984 applies to the following samples: 2106140-01B

Sample ID: **MB-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:47:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	<0.100	0.300								
Dissolved Sodium	<0.100	0.300								

Sample ID: **MB-100970-FILTER** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:49:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	<0.100	0.300								
Dissolved Sodium	<0.100	0.300								

Sample ID: **LCS-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:51:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	4.97	0.300	5.00	0	99.4	80	120			
Dissolved Sodium	5.04	0.300	5.00	0	101	80	120			

Sample ID: **LCSD-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:53:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	4.41	0.300	5.00	0	88.2	80	120	12.0	15	
Dissolved Sodium	4.34	0.300	5.00	0	86.7	80	120	15.1	15	

Sample ID: **2106124-03B SD** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:59:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	271	30.0	0	261				3.51	20	
Dissolved Sodium	199	30.0	0	197				1.07	20	

Sample ID: **2106124-03B PDS** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 4:03:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	357	6.00	100	261	95.4	75	125			
Dissolved Sodium	288	6.00	100	197	91.1	75	125			

Qualifiers:				
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210623A

Sample ID: **2106124-03B MS**	Batch ID: **100984**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_210623A**	Analysis Date: **6/23/2021 4:06:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	272	6.00	5.00	261	215	75	125			S
Dissolved Sodium	202	6.00	5.00	197	106	75	125			

Sample ID: **2106124-03B MSD**	Batch ID: **100984**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_210623A**	Analysis Date: **6/23/2021 4:08:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	274	6.00	5.00	261	244	75	125	0.538	15	S
Dissolved Sodium	203	6.00	5.00	197	117	75	125	0.291	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_210623A

Sample ID: **ICV-210623** Batch ID: **R115915** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 11:54:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	2.55	0.300	2.50	0	102	90	110			
Dissolved Magnesium	2.44	0.300	2.50	0	97.7	90	110			
Dissolved Sodium	2.42	0.300	2.50	0	96.6	90	110			

Sample ID: **LCVL-210623** Batch ID: **R115915** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 12:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	0.103	0.300	0.100	0	103	80	120			
Dissolved Magnesium	0.0969	0.300	0.100	0	96.9	80	120			
Dissolved Sodium	0.0931	0.300	0.100	0	93.1	80	120			

Sample ID: **CCV6-210623** Batch ID: **R115915** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 3:43:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	4.86	0.300	5.00	0	97.2	90	110			
Dissolved Magnesium	5.07	0.300	5.00	0	101	90	110			
Dissolved Sodium	4.86	0.300	5.00	0	97.2	90	110			

Sample ID: **CCV7-210623** Batch ID: **R115915** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS4_210623A** Analysis Date: **6/23/2021 4:10:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Calcium	4.95	0.300	5.00	0	99.0	90	110			
Dissolved Magnesium	5.07	0.300	5.00	0	101	90	110			
Dissolved Sodium	4.87	0.300	5.00	0	97.5	90	110			

Qualifiers:			
B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210623B

The QC data in batch 100984 applies to the following samples: 2106140-01B

Sample ID: **MB-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:37:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	<0.100	0.300								
Dissolved Potassium	<0.100	0.300								

Sample ID: **MB-100970-FILTER** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:42:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	<0.100	0.300								
Dissolved Potassium	<0.100	0.300								

Sample ID: **LCS-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:44:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	5.28	0.300	5.00	0	106	80	120			
Dissolved Potassium	5.14	0.300	5.00	0	103	80	120			

Sample ID: **LCSD-100984** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:47:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	5.20	0.300	5.00	0	104	80	120	1.60	15	
Dissolved Potassium	5.07	0.300	5.00	0	101	80	120	1.38	15	

Sample ID: **2106124-03B SD** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:55:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	61.5	1.50	0	59.8				2.82	20	
Dissolved Potassium	34.6	1.50	0	34.0				1.72	20	

Sample ID: **2106124-03B PDS** Batch ID: **100984** TestNo: **SW6020B** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 3:20:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	62.2	0.300	5.00	59.8	47.8	75	125			S
Dissolved Potassium	37.3	0.300	5.00	34.1	65.0	75	125			S

Qualifiers:					
	B	Analyte detected in the associated Method Blank	DF	Dilution Factor
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
	RL	Reporting Limit	S	Spike Recovery outside control limits
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210623B

Sample ID: **2106124-03B MS**	Batch ID: **100984**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS5_210623B**	Analysis Date: **6/23/2021 3:24:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	67.7	0.300	5.00	59.8	158	75	125			S
Dissolved Potassium	39.0	0.300	5.00	34.1	99.8	75	125			

Sample ID: **2106124-03B MSD**	Batch ID: **100984**	TestNo: **SW6020B**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS5_210623B**	Analysis Date: **6/23/2021 3:26:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	67.5	0.300	5.00	59.8	154	75	125	0.312	15	S
Dissolved Potassium	39.2	0.300	5.00	34.1	103	75	125	0.442	15	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS5_210623B

Sample ID: **ICV-210623** Batch ID: **R115914** TestNo: **SW6020B** Units: **mg/L**
SampType: **ICV** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 10:44:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	2.45	0.300	2.50	0	98.1	90	110			
Dissolved Potassium	2.46	0.300	2.50	0	98.3	90	110			

Sample ID: **LCVL-210623** Batch ID: **R115914** TestNo: **SW6020B** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 10:50:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	0.0962	0.300	0.100	0	96.2	80	120			
Dissolved Potassium	0.0841	0.300	0.100	0	84.1	80	120			

Sample ID: **CCV5-210623** Batch ID: **R115914** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 2:30:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	5.18	0.300	5.00	0	104	90	110			
Dissolved Potassium	5.10	0.300	5.00	0	102	90	110			

Sample ID: **CCV6-210623** Batch ID: **R115914** TestNo: **SW6020B** Units: **mg/L**
SampType: **CCV** Run ID: **ICP-MS5_210623B** Analysis Date: **6/23/2021 3:29:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Dissolved Magnesium	5.11	0.300	5.00	0	102	90	110			
Dissolved Potassium	4.92	0.300	5.00	0	98.5	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_210622A

The QC data in batch 100985 applies to the following samples: 2106140-01A

Sample ID: **LCS-100985** Batch ID: **100985** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS3_210622A** Analysis Date: **6/22/2021 10:48:00 AM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0267	0.00100	0.0232	0	115	81	122			
Ethylbenzene	0.0259	0.00100	0.0232	0	111	80	120			
Toluene	0.0275	0.00200	0.0232	0	119	80	120			
Total Xylenes	0.0788	0.00100	0.0696	0	113	80	120			
Surr: 1,2-Dichloroethane-d4	185		200.0		92.4	72	119			
Surr: 4-Bromofluorobenzene	199		200.0		99.4	76	119			
Surr: Dibromofluoromethane	212		200.0		106	85	115			
Surr: Toluene-d8	207		200.0		104	81	120			

Sample ID: **MB-100985** Batch ID: **100985** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS3_210622A** Analysis Date: **6/22/2021 11:14:00 AM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Total Xylenes	<0.000300	0.00100								
Surr: 1,2-Dichloroethane-d4	187		200.0		93.4	72	119			
Surr: 4-Bromofluorobenzene	200		200.0		100	76	119			
Surr: Dibromofluoromethane	212		200.0		106	85	115			
Surr: Toluene-d8	207		200.0		104	81	120			

Sample ID: **2106130-02AMS** Batch ID: **100985** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS3_210622A** Analysis Date: **6/22/2021 7:52:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0251	0.00100	0.0232	0	108	81	122			
Ethylbenzene	0.0244	0.00100	0.0232	0	105	80	120			
Toluene	0.0258	0.00200	0.0232	0	111	80	120			
Total Xylenes	0.0746	0.00100	0.0696	0	107	80	120			
Surr: 1,2-Dichloroethane-d4	198		200.0		98.8	72	119			
Surr: 4-Bromofluorobenzene	201		200.0		100	76	119			
Surr: Dibromofluoromethane	209		200.0		104	85	115			
Surr: Toluene-d8	207		200.0		103	81	120			

Sample ID: **2106130-02AMSD** Batch ID: **100985** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS3_210622A** Analysis Date: **6/22/2021 8:17:00 PM** Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0254	0.00100	0.0232	0	110	81	122	1.41	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_210622A

Sample ID: **2106130-02AMSD**	Batch ID: **100985**	TestNo: **SW8260D**	Units: **mg/L**
SampType: **MSD**	Run ID: **GCMS3_210622A**	Analysis Date: **6/22/2021 8:17:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Ethylbenzene	0.0246	0.00100	0.0232	0	106	80	120	0.807	20	
Toluene	0.0260	0.00200	0.0232	0	112	80	120	0.988	20	
Total Xylenes	0.0753	0.00100	0.0696	0	108	80	120	0.961	20	
Surr: 1,2-Dichloroethane-d4	198		200.0		99.2	72	119	0	0	
Surr: 4-Bromofluorobenzene	203		200.0		102	76	119	0	0	
Surr: Dibromofluoromethane	209		200.0		104	85	115	0	0	
Surr: Toluene-d8	207		200.0		104	81	120	0	0	

Sample ID: **SB-210623**	Batch ID: **100985**	TestNo: **SW8260D**	Units: **mg/L**
SampType: **SBLK**	Run ID: **GCMS3_210622A**	Analysis Date: **6/23/2021 10:23:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100	0							
Surr: 1,2-Dichloroethane-d4	196		0							
Surr: 4-Bromofluorobenzene	200		0							
Surr: Dibromofluoromethane	209		0							
Surr: Toluene-d8	206		0							

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS3_210622A

Sample ID: **ICV-210622** Batch ID: **R115894** TestNo: **SW8260D** Units: **mg/L**
SampType: **ICV** Run ID: **GCMS3_210622A** Analysis Date: **6/22/2021 10:22:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0534	0.00100	0.0464	0	115	70	130			
Ethylbenzene	0.0515	0.00100	0.0464	0	111	70	130			
Toluene	0.0550	0.00200	0.0464	0	119	70	130			
Total Xylenes	0.155	0.00100	0.139	0	112	70	130			
Surr: 1,2-Dichloroethane-d4	186		200.0		92.9	72	119			
Surr: 4-Bromofluorobenzene	199		200.0		99.4	76	119			
Surr: Dibromofluoromethane	212		200.0		106	85	115			
Surr: Toluene-d8	208		200.0		104	81	120			

Sample ID: **ICV-210623** Batch ID: **R115894** TestNo: **SW8260D** Units: **mg/L**
SampType: **ICV** Run ID: **GCMS3_210622A** Analysis Date: **6/23/2021 9:57:00 AM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0463	0.00100	0.0464	0	99.8	70	130			
Surr: 1,2-Dichloroethane-d4	195		200.0		97.5	72	119			
Surr: 4-Bromofluorobenzene	201		200.0		100	76	119			
Surr: Dibromofluoromethane	209		200.0		105	85	115			
Surr: Toluene-d8	205		200.0		103	81	120			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210625A

The QC data in batch 101035 applies to the following samples: 2106140-01D

Sample ID: **MB-101035** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 10:51:52 AM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	<0.300	1.00	0							
Sulfate	<1.00	3.00	0							

Sample ID: **LCS-101035** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 11:07:44 AM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Sulfate	30.0	3.00	30.00	0	100	90	110			

Sample ID: **LCSD-101035** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 11:23:44 AM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.6	1.00	10.00	0	106	90	110	4.25	20	
Sulfate	31.2	3.00	30.00	0	104	90	110	3.93	20	

Sample ID: **2106140-01DMS** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 3:52:05 PM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2090	100	2000	152.6	96.8	90	110			
Sulfate	3600	300	2000	1851	87.5	90	110			S

Sample ID: **2106140-01DMSD** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 4:08:05 PM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	2070	100	2000	152.6	95.9	90	110	0.885	20	
Sulfate	3610	300	2000	1851	88.0	90	110	0.241	20	S

Sample ID: **2106127-11BMS** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 5:12:05 PM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	712	10.0	200.0	673.4	19.3	90	110			S
Sulfate	322	30.0	200.0	142.3	89.7	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210625A

Sample ID: **2106127-11BMSD** Batch ID: **101035** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_210625A** Analysis Date: **6/25/2021 5:30:55 PM** Prep Date: **6/25/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	713	10.0	200.0	673.4	19.8	90	110	0.139	20	S
Sulfate	322	30.0	200.0	142.3	89.9	90	110	0.170	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_210625A

Sample ID: **ICV-210625**	Batch ID: **R115953**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_210625A**	Analysis Date: **6/25/2021 10:19:44 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	26.0	1.00	25.00	0	104	90	110			
Sulfate	78.2	3.00	75.00	0	104	90	110			

Sample ID: **CCV1-210625**	Batch ID: **R115953**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_210625A**	Analysis Date: **6/25/2021 8:10:55 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	9.98	1.00	10.00	0	99.8	90	110			
Sulfate	29.4	3.00	30.00	0	97.9	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_210622A

The QC data in batch 100979 applies to the following samples: 2106140-01D

Sample ID: **MB-100979**	Batch ID: **100979**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.35**
SampType: **MBLK**	Run ID: **TITRATOR_210622A**	Analysis Date: **6/22/2021 2:13:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0								
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0								
Alkalinity, Total (As CaCO3)	<20.0	20.0								

Sample ID: **LCS-100979**	Batch ID: **100979**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.31**
SampType: **LCS**	Run ID: **TITRATOR_210622A**	Analysis Date: **6/22/2021 2:18:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	53.0	20.0	50.00	0	106	74	129			

Sample ID: **2106148-05D-DUP**	Batch ID: **100979**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.53**
SampType: **DUP**	Run ID: **TITRATOR_210622A**	Analysis Date: **6/22/2021 5:22:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	99.9	20.0	0	101.0				1.10	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	99.9	20.0	0	101.0				1.10	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_210622A

Sample ID: **ICV-210622**	Batch ID: **R115905**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.35**
SampType: **ICV**	Run ID: **TITRATOR_210622A**	Analysis Date: **6/22/2021 2:05:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	3.52	20.0	0							
Alkalinity, Carbonate (As CaCO3)	97.3	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	101	20.0	100.0	0	101	98	102			

Sample ID: **CCV1-210622**	Batch ID: **R115905**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.39**
SampType: **CCV**	Run ID: **TITRATOR_210622A**	Analysis Date: **6/22/2021 5:28:00 PM**	Prep Date: **6/22/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	24.6	20.0	0							
Alkalinity, Carbonate (As CaCO3)	75.5	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	100	20.0	100.0	0	100	90	110			

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

CLIENT: Larson & Associates
Work Order: 2106140
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: WC_210621B

The QC data in batch 100962 applies to the following samples: 2106140-01D

Sample ID: **MB-100962**	Batch ID: **100962**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_210621B**	Analysis Date: **6/21/2021 2:10:00 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	<10.0	10.0								

Sample ID: **LCS-100962**	Batch ID: **100962**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_210621B**	Analysis Date: **6/21/2021 2:10:00 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	774	10.0	745.6	0	104	90	113			

Sample ID: **2106122-08B-DUP**	Batch ID: **100962**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210621B**	Analysis Date: **6/21/2021 2:10:00 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4810	50.0	0	4870				1.34	5	

Sample ID: **2106122-09B-DUP**	Batch ID: **100962**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_210621B**	Analysis Date: **6/21/2021 2:10:00 PM**	Prep Date: **6/21/2021**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	1140	50.0	0	1155				1.75	5	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

DHL ANALYTICAL
MINERAL BALANCE REPORT

Larson & Associates

Client Project Number: 6-0141-06
Location: Empire ABO
DHL Project Number: 2106140

Sample ID: **MW-22**
Lab ID Number: **2106140-01**

PARAMETER	RESULT	UNITS	METHOD
Calcium	664	mg/L	SW6020B
Magnesium	227	mg/L	SW6020B
Sodium	73.3	mg/L	SW6020B
Potassium	4.42	mg/L	SW6020B
Carbonate	0	mg/L @ pH 4.54	M2320 B
Bicarbonate	748	mg/L @ pH 4.54	M2320 B
Sulfate	1850	mg/L	E300
T-Alkalinity	748	mg/L @ pH 4.54	M2320 B
Hardness	2593	mg/L	SM 2340B
Chloride	78.1	mg/L	E300
TDS	3740	mg/L	M2540C

ANION-CATION BALANCE ACCEPTABLE? YES / NO

ANALYTE	*Meq/L*
T-Alkalinity	14.95
Calcium	33.13
Chloride	2.20
Magnesium	18.67
Potassium	0.11
Sodium	3.19
Sulfate	38.52
TOTAL ANIONS	55.7
TOTAL CATIONS	55.1
CATION/ANION (% DIFF)	-0.51
Calculated TDS	3271
TDS Ratio (Meas/Calc) (0.85 - 1.15)	1.14
TDS / Cond Ratio (0.55 - 0.85)	N/A

Comments: _____

Lab Rep Name/Signature: _____

Date: 06/28/21

Cation/Anion % Difference calculated per SM1030E.

DHL ANALYTICAL

January 12, 2022

Mark Larson
Larson & Associates
507 N. Marienfeld #202
Midland, TX 79701
TEL: (432) 687-0901
FAX (432) 687-0456

Order No.: 2201034

RE: Empire ABO

Dear Mark Larson:

DHL Analytical, Inc. received 13 sample(s) on 1/7/2022 for the analyses presented in the following report.

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative and all estimated uncertainties of results are within method specifications.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-21-27

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№ 1885

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 202
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 1/5/2022 PAGE 1 OF 1
PO#: LAB WORK ORDER#: 2201034
PROJECT LOCATION OR NAME: Empire ABO
LAI PROJECT #: G-0141-06 COLLECTOR: RW + DSG

TRRP report? ☐ Yes ☒ No

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR OT=OTHER

TIME ZONE: Time zone/State: MST/NM

PRESERVATION: HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | ICE | UNPRESSERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESSERVED	BTEX	FIELD NOTES
MW-18	01	1/4/22	1218	W	3	X					X	
EB-02	02	"	1304	"	"	"					"	
P-02	03	"	1330	"	"	"					"	
MW-15	04	"	1406	"	"	"					"	
MW-17	05	"	1439	"	"	"					"	
~~[illegible]~~	~~[illegible]~~		~~[illegible]~~									
MW-24	06	"	1525	"	"	"					"	
MW-08	07	"	1549	"	"	"					"	
Dup-1	08	"		"	"	"					"	
MW-20	09	1/5/22	0738	"	"	"					"	
MW-12	10	"	0755	"	"	"					"	
MW-22	11	"	0826	"	"	"					"	
MW-02	12	"	0846	"	"	"					"	
Dup-2	13	"		"	"	"					"	
TOTAL												

RELINQUISHED BY:(Signature) DATE/TIME 1/5/22 1533 RECEIVED BY: (Signature) fedex
RELINQUISHED BY:(Signature) fedex DATE/TIME 1/7/22 0955 RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: DHL

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 4.5 °C THERM#: 78
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USE
☐ CARRIER BILL #
☐ HAND DELIVERED via Fedex

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CUSTODY SEAL

DATE 01/06/22

SIGNATURE John White

DHL ANALYTICAL

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name **Larson & Associates** Date Received: 1/7/2022

Work Order Number **2201034** Received by: **RA**

Checklist completed by: _____ 1/7/2022 Reviewed by SH 1/7/2022
Signature | Date | Initials | Date

Carrier name: FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	**4.5** °C
Water - VOA vials have zero headspace?	Yes ☑	No ☐	No VOA vials submitted ☐
Water - pH<2 acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by
Water - ph>9 (S) or ph>10 (CN) acceptable upon receipt?	Yes ☐	No ☐	NA ☑ LOT #
	Adjusted?		Checked by

Any No response must be detailed in the comments section below.

Client contacted: _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding: _____

Comments: _____

Corrective Action: _____

Page 1 of 1

DHL Analytical, Inc. **Date:** *12-Jan-22*

CLIENT: Larson & Associates
Project: Empire ABO
Lab Order: 2201034

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-18
Project:	Empire ABO	**Lab ID:**	2201034-01
Project No:	6-0141-06	**Collection Date:**	01/04/22 12:18 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 05:31 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 05:31 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 05:31 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 05:31 PM
Surr: 1,2-Dichloroethane-d4	96.6	0	72-119		%REC	1	01/07/22 05:31 PM
Surr: 4-Bromofluorobenzene	90.4	0	76-119		%REC	1	01/07/22 05:31 PM
Surr: Dibromofluoromethane	99.0	0	85-115		%REC	1	01/07/22 05:31 PM
Surr: Toluene-d8	93.5	0	81-120		%REC	1	01/07/22 05:31 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	EB-02
Project:	Empire ABO	**Lab ID:**	2201034-02
Project No:	6-0141-06	**Collection Date:**	01/04/22 01:04 PM
Lab Order:	2201034	**Matrix:**	EQUIP BLANK

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 03:47 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 03:47 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 03:47 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 03:47 PM
Surr: 1,2-Dichloroethane-d4	96.6	0	72-119		%REC	1	01/07/22 03:47 PM
Surr: 4-Bromofluorobenzene	90.7	0	76-119		%REC	1	01/07/22 03:47 PM
Surr: Dibromofluoromethane	98.2	0	85-115		%REC	1	01/07/22 03:47 PM
Surr: Toluene-d8	94.5	0	81-120		%REC	1	01/07/22 03:47 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	P-02
Project:	Empire ABO	**Lab ID:**	2201034-03
Project No:	6-0141-06	**Collection Date:**	01/04/22 01:30 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	0.000645	0.000300	0.00100	J	mg/L	1	01/07/22 05:57 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 05:57 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 05:57 PM
Total Xylenes	0.00280	0.000300	0.00100		mg/L	1	01/07/22 05:57 PM
Surr: 1,2-Dichloroethane-d4	95.4	0	72-119		%REC	1	01/07/22 05:57 PM
Surr: 4-Bromofluorobenzene	92.0	0	76-119		%REC	1	01/07/22 05:57 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	01/07/22 05:57 PM
Surr: Toluene-d8	93.8	0	81-120		%REC	1	01/07/22 05:57 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-15
Project:	Empire ABO	**Lab ID:**	2201034-04
Project No:	6-0141-06	**Collection Date:**	01/04/22 02:06 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 06:23 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 06:23 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 06:23 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 06:23 PM
Surr: 1,2-Dichloroethane-d4	98.6	0	72-119		%REC	1	01/07/22 06:23 PM
Surr: 4-Bromofluorobenzene	91.4	0	76-119		%REC	1	01/07/22 06:23 PM
Surr: Dibromofluoromethane	100	0	85-115		%REC	1	01/07/22 06:23 PM
Surr: Toluene-d8	92.2	0	81-120		%REC	1	01/07/22 06:23 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-17
Project:	Empire ABO	**Lab ID:**	2201034-05
Project No:	6-0141-06	**Collection Date:**	01/04/22 02:39 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	0.000859	0.000300	0.00100	J	mg/L	1	01/07/22 06:49 PM
Ethylbenzene	0.000971	0.000300	0.00100	J	mg/L	1	01/07/22 06:49 PM
Toluene	0.00129	0.000600	0.00200	J	mg/L	1	01/07/22 06:49 PM
Total Xylenes	0.000358	0.000300	0.00100	J	mg/L	1	01/07/22 06:49 PM
Surr: 1,2-Dichloroethane-d4	100	0	72-119		%REC	1	01/07/22 06:49 PM
Surr: 4-Bromofluorobenzene	91.2	0	76-119		%REC	1	01/07/22 06:49 PM
Surr: Dibromofluoromethane	101	0	85-115		%REC	1	01/07/22 06:49 PM
Surr: Toluene-d8	92.6	0	81-120		%REC	1	01/07/22 06:49 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-24
Project:	Empire ABO	**Lab ID:**	2201034-06
Project No:	6-0141-06	**Collection Date:**	01/04/22 03:25 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	2.33	0.00600	0.0200		mg/L	20	01/07/22 07:15 PM
Ethylbenzene	0.601	0.00600	0.0200		mg/L	20	01/07/22 07:15 PM
Toluene	<0.0120	0.0120	0.0400		mg/L	20	01/07/22 07:15 PM
Total Xylenes	0.483	0.00600	0.0200		mg/L	20	01/07/22 07:15 PM
Surr: 1,2-Dichloroethane-d4	98.4	0	72-119		%REC	20	01/07/22 07:15 PM
Surr: 4-Bromofluorobenzene	90.8	0	76-119		%REC	20	01/07/22 07:15 PM
Surr: Dibromofluoromethane	96.8	0	85-115		%REC	20	01/07/22 07:15 PM
Surr: Toluene-d8	92.9	0	81-120		%REC	20	01/07/22 07:15 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-08
Project:	Empire ABO	**Lab ID:**	2201034-07
Project No:	6-0141-06	**Collection Date:**	01/04/22 03:49 PM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	0.000880	0.000300	0.00100	J	mg/L	1	01/07/22 07:41 PM
Ethylbenzene	0.000806	0.000300	0.00100	J	mg/L	1	01/07/22 07:41 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 07:41 PM
Total Xylenes	0.000783	0.000300	0.00100	J	mg/L	1	01/07/22 07:41 PM
Surr: 1,2-Dichloroethane-d4	98.8	0	72-119		%REC	1	01/07/22 07:41 PM
Surr: 4-Bromofluorobenzene	90.4	0	76-119		%REC	1	01/07/22 07:41 PM
Surr: Dibromofluoromethane	98.9	0	85-115		%REC	1	01/07/22 07:41 PM
Surr: Toluene-d8	92.7	0	81-120		%REC	1	01/07/22 07:41 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	Dup-1
Project:	Empire ABO	**Lab ID:**	2201034-08
Project No:	6-0141-06	**Collection Date:**	01/04/22
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:25 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:25 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 09:25 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:25 PM
Surr: 1,2-Dichloroethane-d4	103	0	72-119		%REC	1	01/07/22 09:25 PM
Surr: 4-Bromofluorobenzene	91.4	0	76-119		%REC	1	01/07/22 09:25 PM
Surr: Dibromofluoromethane	97.2	0	85-115		%REC	1	01/07/22 09:25 PM
Surr: Toluene-d8	92.4	0	81-120		%REC	1	01/07/22 09:25 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-20
Project:	Empire ABO	**Lab ID:**	2201034-09
Project No:	6-0141-06	**Collection Date:**	01/05/22 07:38 AM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:07 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:07 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 08:07 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:07 PM
Surr: 1,2-Dichloroethane-d4	97.8	0	72-119		%REC	1	01/07/22 08:07 PM
Surr: 4-Bromofluorobenzene	90.8	0	76-119		%REC	1	01/07/22 08:07 PM
Surr: Dibromofluoromethane	98.8	0	85-115		%REC	1	01/07/22 08:07 PM
Surr: Toluene-d8	92.2	0	81-120		%REC	1	01/07/22 08:07 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-12
Project:	Empire ABO	**Lab ID:**	2201034-10
Project No:	6-0141-06	**Collection Date:**	01/05/22 07:55 AM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:33 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:33 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 08:33 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:33 PM
Surr: 1,2-Dichloroethane-d4	98.3	0	72-119		%REC	1	01/07/22 08:33 PM
Surr: 4-Bromofluorobenzene	89.9	0	76-119		%REC	1	01/07/22 08:33 PM
Surr: Dibromofluoromethane	99.4	0	85-115		%REC	1	01/07/22 08:33 PM
Surr: Toluene-d8	93.6	0	81-120		%REC	1	01/07/22 08:33 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-22
Project:	Empire ABO	**Lab ID:**	2201034-11
Project No:	6-0141-06	**Collection Date:**	01/05/22 08:26 AM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	1.58	0.00600	0.0200		mg/L	20	01/07/22 10:16 PM
Ethylbenzene	0.105	0.00600	0.0200		mg/L	20	01/07/22 10:16 PM
Toluene	<0.0120	0.0120	0.0400		mg/L	20	01/07/22 10:16 PM
Total Xylenes	0.137	0.00600	0.0200		mg/L	20	01/07/22 10:16 PM
Surr: 1,2-Dichloroethane-d4	99.2	0	72-119		%REC	20	01/07/22 10:16 PM
Surr: 4-Bromofluorobenzene	90.9	0	76-119		%REC	20	01/07/22 10:16 PM
Surr: Dibromofluoromethane	97.0	0	85-115		%REC	20	01/07/22 10:16 PM
Surr: Toluene-d8	92.6	0	81-120		%REC	20	01/07/22 10:16 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	MW-02
Project:	Empire ABO	**Lab ID:**	2201034-12
Project No:	6-0141-06	**Collection Date:**	01/05/22 08:46 AM
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	0.000815	0.000300	0.00100	J	mg/L	1	01/07/22 08:59 PM
Ethylbenzene	0.000520	0.000300	0.00100	J	mg/L	1	01/07/22 08:59 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 08:59 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 08:59 PM
Surr: 1,2-Dichloroethane-d4	97.9	0	72-119		%REC	1	01/07/22 08:59 PM
Surr: 4-Bromofluorobenzene	92.4	0	76-119		%REC	1	01/07/22 08:59 PM
Surr: Dibromofluoromethane	97.9	0	85-115		%REC	1	01/07/22 08:59 PM
Surr: Toluene-d8	92.4	0	81-120		%REC	1	01/07/22 08:59 PM

Qualifiers:

*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc.

Date: *12-Jan-22*

CLIENT:	Larson & Associates	**Client Sample ID:**	Dup-2
Project:	Empire ABO	**Lab ID:**	2201034-13
Project No:	6-0141-06	**Collection Date:**	01/05/22
Lab Order:	2201034	**Matrix:**	AQUEOUS

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed
8260 WATER VOLATILES BY GC/MS		**SW8260D**					Analyst: **SNM**
Benzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:51 PM
Ethylbenzene	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:51 PM
Toluene	<0.000600	0.000600	0.00200		mg/L	1	01/07/22 09:51 PM
Total Xylenes	<0.000300	0.000300	0.00100		mg/L	1	01/07/22 09:51 PM
Surr: 1,2-Dichloroethane-d4	99.7	0	72-119		%REC	1	01/07/22 09:51 PM
Surr: 4-Bromofluorobenzene	90.3	0	76-119		%REC	1	01/07/22 09:51 PM
Surr: Dibromofluoromethane	99.0	0	85-115		%REC	1	01/07/22 09:51 PM
Surr: Toluene-d8	91.7	0	81-120		%REC	1	01/07/22 09:51 PM

Qualifiers:	*	Value exceeds TCLP Maximum Concentration Level	C	Sample Result or QC discussed in the Case Narrative
	DF	Dilution Factor	E	TPH pattern not Gas or Diesel Range Pattern
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit
	ND	Not Detected at the Method Detection Limit	RL	Reporting Limit
	S	Spike Recovery outside control limits	N	Parameter not NELAP certified

DHL Analytical, Inc. **Date:** *12-Jan-22*

CLIENT: Larson & Associates
Work Order: 2201034
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_220107A

The QC data in batch 103465 applies to the following samples: 2201034-01A, 2201034-02A, 2201034-03A, 2201034-04A, 2201034-05A, 2201034-06A, 2201034-07A, 2201034-08A, 2201034-09A, 2201034-10A, 2201034-11A, 2201034-12A, 2201034-13A

Sample ID: **LCS-103465** Batch ID: **103465** TestNo: **SW8260D** Units: **mg/L**
SampType: **LCS** Run ID: **GCMS5_220107A** Analysis Date: **1/7/2022 2:21:00 PM** Prep Date: **1/7/2022**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.0235	0.00100	0.0232	0	101	81	122			
Ethylbenzene	0.0205	0.00100	0.0232	0	88.5	80	120			
Toluene	0.0225	0.00200	0.0232	0	97.1	80	120			
Total Xylenes	0.0627	0.00100	0.0696	0	90.1	80	120			
Surr: 1,2-Dichloroethane-d4	188		200.0		94.1	72	119			
Surr: 4-Bromofluorobenzene	183		200.0		91.5	76	119			
Surr: Dibromofluoromethane	201		200.0		100	85	115			
Surr: Toluene-d8	185		200.0		92.5	81	120			

Sample ID: **MB-103465** Batch ID: **103465** TestNo: **SW8260D** Units: **mg/L**
SampType: **MBLK** Run ID: **GCMS5_220107A** Analysis Date: **1/7/2022 2:47:00 PM** Prep Date: **1/7/2022**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	<0.000300	0.00100								
Ethylbenzene	<0.000300	0.00100								
Toluene	<0.000600	0.00200								
Total Xylenes	<0.000300	0.00100								
Surr: 1,2-Dichloroethane-d4	189		200.0		94.3	72	119			
Surr: 4-Bromofluorobenzene	183		200.0		91.6	76	119			
Surr: Dibromofluoromethane	199		200.0		99.4	85	115			
Surr: Toluene-d8	187		200.0		93.5	81	120			

Sample ID: **2201034-11AMS** Batch ID: **103465** TestNo: **SW8260D** Units: **mg/L**
SampType: **MS** Run ID: **GCMS5_220107A** Analysis Date: **1/7/2022 10:42:00 PM** Prep Date: **1/7/2022**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.99	0.100	2.32	1.27	117	81	122			
Ethylbenzene	2.56	0.100	2.32	0.0835	107	80	120			
Toluene	2.65	0.200	2.32	0	114	80	120			
Total Xylenes	7.56	0.100	6.96	0.111	107	80	120			
Surr: 1,2-Dichloroethane-d4	19600		20000		97.8	72	119			
Surr: 4-Bromofluorobenzene	17700		20000		88.6	76	119			
Surr: Dibromofluoromethane	19600		20000		98.1	85	115			
Surr: Toluene-d8	18400		20000		91.9	81	120			

Qualifiers:	B	Analyte detected in the associated Method Blank	DF	Dilution Factor	
	J	Analyte detected between MDL and RL	MDL	Method Detection Limit	
	ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits	
	RL	Reporting Limit	S	Spike Recovery outside control limits	
	J	Analyte detected between SDL and RL	N	Parameter not NELAP certified	

CLIENT: Larson & Associates
Work Order: 2201034
Project: Empire ABO

ANALYTICAL QC SUMMARY REPORT

RunID: GCMS5_220107A

Sample ID: **2201034-11AMSD** Batch ID: **103465** TestNo: **SW8260D** Units: **mg/L**
SampType: **MSD** Run ID: **GCMS5_220107A** Analysis Date: **1/7/2022 11:08:00 PM** Prep Date: **1/7/2022**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.84	0.100	2.32	1.27	111	81	122	3.99	20	
Ethylbenzene	2.49	0.100	2.32	0.0835	104	80	120	2.62	20	
Toluene	2.58	0.200	2.32	0	111	80	120	2.87	20	
Total Xylenes	7.40	0.100	6.96	0.111	105	80	120	2.16	20	
Surr: 1,2-Dichloroethane-d4	19300		20000		96.5	72	119	0	0	
Surr: 4-Bromofluorobenzene	17900		20000		89.3	76	119	0	0	
Surr: Dibromofluoromethane	19600		20000		98.1	85	115	0	0	
Surr: Toluene-d8	18500		20000		92.3	81	120	0	0	

Qualifiers:

B	Analyte detected in the associated Method Blank	DF	Dilution Factor
J	Analyte detected between MDL and RL	MDL	Method Detection Limit
ND	Not Detected at the Method Detection Limit	R	RPD outside accepted control limits
RL	Reporting Limit	S	Spike Recovery outside control limits
J	Analyte detected between SDL and RL	N	Parameter not NELAP certified

Appendix D

EcoVac Reports

ECOVAC SERVICES
The World Leader in Mobile Dual-Phase/Multi-Phase Extraction
Patented SURFAC®/COSOLV®/ISCO-EFR®
Treatability Testing/Research and Development

February 09, 2021

Mr. Mark Larson
President
Larson & Associates, Inc.
507 N Marienfeld St #205
Midland, Texas 79701-4356
Mark@laenvironmental.com

Subject: **Enhanced Fluid Recovery (EFR®) Report**
February 02 through 06, 2021
AKA Energy
Former Empire Abo Gas Processing Plant
Eddy County, Artesia, New Mexico

Dear Mr. Larson:

Please find attached the data summary for the EFR® remediation conducted at the subject site on February 02 thru 06, 2021. The EFR® remediation was implemented in numerous wells located inside the facility fence. EFR® is a mobile multi-phase/dual-phase extraction technology shown to be effective for mass removal of hydrocarbons in the soils/groundwater.

February 02, 2021

EFR® was performed for 8.0 hours at well MW-02-11 for this event. Separate-phase hydrocarbons (SPH) were not detected in well MW-02-11 as the well was dry prior to conducting this event, and upon conclusion of this event.

A calculated total of 611 pounds of petroleum hydrocarbons (approximately 100.8 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on February 02, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 84.5 pounds per hour during the initial portion of the event, and at the end of the event, to a low of 50.7 pounds per hour at the very beginning of the event. The hydrocarbon removal rate was extremely high, and was slightly variable during the event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) throughout most of the event, to a low of 60,000 PPM_V at the very beginning of the

event. The concentrations were extremely high throughout the event, and were constant after the initial reading.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	20 to 21 inches of mercury
MW-02-11	8 to 17 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-11	dry	Extraction Well

Groundwater Extraction

A total of 0 gallons of fluid were extracted from the well during this 8.0-hour event.

February 03, 2021

EFR® was performed for 8.0 hours at well MW-02-11 for this event. Separate-phase hydrocarbons (SPH) were not detected in well MW-02-11 as the well was dry prior to conducting this event, and upon conclusion of this event.

A calculated total of 431.7 pounds of petroleum hydrocarbons (approximately 71.2 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on February 03, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 84.5 pounds per hour at the beginning of the event, to a low of 42.2 pounds per hour at the end of the event. The hydrocarbon removal rate was extremely high, and decreased during the event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 50,000 PPM_V at the end of the event. The concentrations were extremely high throughout the event, and decreased during the event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	21 to 23 inches of mercury
MW-02-11	16 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-11	dry	Extraction Well

Groundwater Extraction
A total of 0 gallons of fluid were extracted from the well during this 8.0-hour event.

February 04, 2021

EFR® was performed for 8 hours at wells MW-02-10 and MW-04 for this event. Separate-phase hydrocarbons (SPH) were not detected in either well prior to conducting this EFR® event, as both wells were dry (mud in the bottom). SPH was not detected in either well upon conclusion of this event.

A calculated total of 587.4 pounds of petroleum hydrocarbons (approximately 101.9 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 5 gallons of liquid phase hydrocarbons, were removed during this EFR® event on February 04, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 84.5 pounds per hour near the beginning of the event, to a low of 56.3 pounds per hour at the end of the event. The hydrocarbon removal rate slightly decreased during the event, and was very high throughout the event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 76,000 PPM_V one hour into the event. The concentrations were high, and generally decreased during the event.

The range of vacuum readings recorded during this EFR® event from the monitor wells are detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	21 inches of mercury
MW-02-10	6 to 15 inches of mercury
MW-04	5 to 9 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-10*	~0.98 feet	Extraction Well
MW-04*	>3.00 feet	Extraction Well

* - was initially dry

Groundwater Extraction
A total of 69 gallons of fluid was extracted from the wells during this 8-hour event. The fluids were off-loaded to an aboveground tank on-site.

February 05, 2021

EFR® was performed for 2 hours at well EB-08, and for ~1.0 hour at MW-23, and for 4.75 hours at MW-21 and MW-02-12 for this event. Separate-phase hydrocarbons (SPH) were detected in wells EB-08, MW-21 and MW-02-12, at a thickness of 0.24', 0.35', and 0.01', respectively, prior to conducting this EFR® event. SPH was not detected in any well upon conclusion of this event.

A calculated total of 125.1 pounds of petroleum hydrocarbons (approximately 20.6 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 44 gallons of liquid phase hydrocarbons, were removed during this EFR® event on February 05, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 30.4 pounds per hour near the middle of the MW-21 and MW-02-12 event, to a low of 1.7 pounds per hour at the beginning of the MW-23 event.

Vapor concentrations varied from a high of 36,000 parts per million by volume (PPM_V) near the middle of the MW-02-12 and MW-21 event, to a low of 2,300 PPM_V at the beginning of the MW-23 event. The concentrations were high from MW-02-12 and MW-21, and were elevated from EB-08 and MW-23.

The range of vacuum readings recorded during this EFR® event from the monitor wells are detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 to 24 inches of mercury
EB-08	13 inches of mercury
MW-23	12 inches of mercury
MW-21	7 inches of mercury
MW-02-12	10 to 16 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
EB-08	0.18 feet	Extraction Well
MW-23	0.33 feet	Extraction Well
MW-21	-0.18 feet	Extraction Well
MW-02-12	2.82 feet	Extraction Well

Groundwater Extraction
A total of 101 gallons of fluid were extracted from the wells during this 8-hour event. The fluids were off-loaded to an aboveground tank on-site.

February 06, 2021

EFR® was performed for 6.0 hours at well MW-10 for this event. Separate-phase hydrocarbons (SPH) were detected in well MW-10, at a thickness of 0.03' prior to conducting this EFR® event. SPH was not detected in well MW-10 upon conclusion of this event.

A calculated total of 84.8 pounds of petroleum hydrocarbons (approximately 14.0 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on February 06, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 56.3 pounds per hour at the beginning of the MW-10 event, to a low of 9.3 pounds per hour in the middle of the MW-10 event. The removal rate was high to elevated, throughout the MW-10 event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the MW-10 event, to a low of 66,000 PPM_V in the middle of the event. The concentrations were very high throughout the MW-10 event.

The range of vacuum readings recorded during this EFR® event from the monitor wells are detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	21 inches of mercury
MW-10	4 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-10	1.17 feet	Extraction Well

Groundwater Extraction
A total of 0 gallons of fluid were extracted from the well during this event.

Hydrocarbon Mass Removal Summary

A significant amount of hydrocarbon mass in vapor form and liquid form was removed during this 5-day event. The following table summarizes the hydrocarbon mass removal totals.

Table: Hydrocarbon Mass Removal Summary

	Hydrocarbon Mass Extraction				
Wells	Date	Vapor lbs.	Vapor Equivalent Gallons	Liquid gallons	**Total Gallons**
MW-02-11	02/02/21	611	100.8	0	**100.8**
MW-02-11	02/03/21	431.7	71.2	0	**71.2**
MW-02-10 MW-04	02/04/21	587.4	101.9	5	**106.9**
EB-08 MW-23 MW-21 MW-02-12	02/05/21	125.1	20.6	44	**64.6**
MW-10	02/06/21	84.8	14.0	0	**14.0**
	Totals:	1,840	308.5	49	**357.5**

Fluid Extraction

A total of 170 gallons of fluids (121 gallons of water and 49 gallons of liquid phase gas) was extracted and off-loaded to an on-site tank.

Thank you for this opportunity to team with Larson & Associates, Inc. in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,
EcoVac Services

Jeffrey M. Brammer

Jeffrey M. Brammer, PG
Western Regional Manager, Hydrogeologist

Attachments:

1. Field Data Sheets

ATTACHMENT 1

FIELD DATA SHEETS

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 02/02/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-11								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	9:15														
MW-02-11	9:30	21	8								60,000	3000	147	50.7	12.7
	9:45	21	11								100,000	3000	147	84.5	21.1
	10:15	20	14								100,000	3000	147	84.5	42.2
	11:15	20	16								100,000	3000	147	84.5	84.5
	12:15	20	16								100,000	3000	147	84.5	84.5
	13:15	20	16								100,000	2500	123	70.4	70.4
	14:15	20	17								100,000	2500	123	70.4	70.4
	15:15	20	17								100,000	2500	123	70.4	70.4
	16:15	20	17								100,000	2500	123	70.4	70.4
	17:15	20	17								100,000	3000	147	84.5	84.5

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-11	4"	23.00	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-11	cracked	23'	Hydrocarbons (vapor):	611.0	pounds
Truck Operator:	Mosley				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	100.8	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	9:15-17:15
# Pumps:	2
RPMs:	1,000

Notes :
onsite 8:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 02/03/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-11								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:15														
MW-02-11	8:30	23	16								100,000	3000	147	84.5	21.1
	8:45	23	16								100,000	3000	147	84.5	21.1
	9:15	22	16								90,000	3000	147	76.0	38.0
	10:15	22	16								70,000	3000	147	59.1	59.1
	11:15	21	16								70,000	3000	147	59.1	59.1
	12:15	21	16								62,000	3000	147	52.4	52.4
	13:15	21	16								60,000	3000	147	50.7	50.7
	14:15	22	16								54,000	3000	147	45.6	45.6
	15:15	22	16								50,000	3000	147	42.2	42.2
	16:15	22	16								50,000	3000	147	42.2	42.2

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-11	4"	23.00	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-11	cracked	23'	Hydrocarbons (vapor):	431.7	pounds
Truck Operator:	Mosley				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	71.2	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	8:15-16:15
# Pumps:	2
RPMs:	1,000

Notes :
onsite 8:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 02/04/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-10	MW-04							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:15														
MW-02-10	8:30	21	8	6							100,000	2500	123	70.4	17.6
MW-04	8:45	21	15	6							100,000	3000	147	84.5	21.1
	9:15	21	15	6							76,000	3000	147	64.2	32.1
	10:15	21	8	5							100,000	3000	147	84.5	84.5
	11:15	21	8	6							100,000	3000	147	84.5	84.5
	12:15	21	6	9							96,000	3000	147	81.1	81.1
	13:15	21	6	9							98,000	3000	147	82.8	82.8
	14:15	21	6	9							95,000	2500	123	66.9	66.9
	15:15	21	6	7							86,000	2500	123	60.5	60.5
	16:15	21	6	7							80,000	2500	123	56.3	56.3

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-10	4"	75.00	-	dry*	0.00	-	74.02	0.00	
MW-04	4"	65.00	-	dry**	0.00	-	59.26	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-10	cracked	70'	Hydrocarbons (vapor):	587.4	pounds
Truck Operator:	Mosley	MW-04	cracked	63'	Hydrocarbons (liquid):	5.0	gallons
Truck No.:	154				Total Hydrocarbons:	101.9	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	69	gallons

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Pump Information	
Time:	8:15-16:15
# Pumps:	2
RPMs:	1,000

Notes :
* - approximately 73' to mud
** - approximately 63' to mud
onsite 8:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 02/05/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	EB-08	MW-23	MW-21	MW-02-12					Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:30														
EB-08	8:45	24	13								2,600	2500	123	1.8	0.5
	9:00	24	13								3,400	2300	113	2.2	0.6
	9:30	24	13								4,200	2300	113	2.7	1.4
	10:30	24	13								3,800	2600	127	2.8	2.8
	10:35														
MW-23	10:45	23		12							2,300	2600	127	1.7	0.3
	11:00	23		12							3,000	2500	123	2.1	0.5
	11:30	23		12							3,800	2500	123	2.7	1.3
	11:45														
MW-02-12	12:00	24			7	16					6,800	2500	123	4.8	1.2
MW-21	12:30	24			7	16					30,000	2000	98	16.9	8.4
	13:30	24			7	10					34,000	3000	147	28.7	28.7
	14:30	24			7	10					35,000	3000	147	29.6	29.6
	15:30	24			7	10					36,000	3000	147	30.4	30.4
	16:30	24			7	10					30,000	2300	113	19.4	19.4

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
EB-08	2"		79.22	79.46	0.24	-	79.08	0.00	0.18
MW-23	4"		-	79.31	0.00	-	78.98	0.00	0.33
MW-21	4"		73.73	74.08	0.35	-	73.96	0.00	-0.18
MW-02-12	4"		73.97	73.98	0.01	-	71.15	0.00	2.82

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	EB-08	cracked	80'	Hydrocarbons (vapor):	125.1	pounds
Truck Operator:	Mosley	MW-23	cracked	80'	Hydrocarbons (liquid):	44.0	gallons
Truck No.:	154	MW-21	cracked	74'	Total Hydrocarbons:	64.6	equiv. gals.
Vacuum Pumps:	Becker	MW-02-12	cracked	74'	Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	101	gallons

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Pump Information	
Time:	8:30-16:30
# Pumps:	2
RPMs:	1,000

Notes :
onsite 8:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 02/06/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
Start Time:	7:45	Inlet	MW-10								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
MW-10	8:00	21	4								100,000	2000	98	56.3	14.1
	8:15	21	4								100,000	2000	98	56.3	14.1
	8:45	21	4								100,000	400	20	11.3	5.6
	9:45	21	4								100,000	400	20	11.3	11.3
	10:45	21	4								78,000	450	22	9.9	9.9
	11:45	21	4								66,000	500	25	9.3	9.3
	12:45	21	4								70,000	500	25	9.9	9.9
	13:45	21	4								76,000	500	25	10.7	10.7

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-10	4"		52.53	52.56	0.03	-	51.36	0.00	1.17

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-10	cracked	52'	Hydrocarbons (vapor):	84.8	pounds
Truck Operator:	Mosley				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	14.0	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	7:45-13:45
# Pumps:	2
RPMs:	1,000

Notes :

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April 27, 2021

Mr. Mark Larson
President
Larson & Associates, Inc.
507 N Marienfeld St #205
Midland, Texas 79701-4356
Mark@laenvironmental.com

Subject: **Enhanced Fluid Recovery (EFR®) Report**
April 19 through 23, 2021
AKA Energy
Former Empire Abo Gas Processing Plant
Eddy County, Artesia, New Mexico

Dear Mr. Larson:

Please find attached the data summary for the EFR® remediation conducted at the subject site on April 19 thru 23, 2021. The EFR® remediation was implemented in numerous wells located inside the facility fence. EFR® is a mobile multi-phase/dual-phase extraction technology shown to be effective for mass removal of hydrocarbons in the soils/groundwater.

April 19, 2021

EFR® was performed for 8.0 hours at well MW-02-11 for this event. Separate-phase hydrocarbons (SPH) were not detected in well MW-02-11 as the well was dry prior to conducting this event, and upon conclusion of this event.

A calculated total of 256.9 pounds of petroleum hydrocarbons (approximately 42.4 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on April 19, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 33.8 pounds per hour during most of the event, and at the end of the event, to a low of 16.9 pounds per hour near the beginning of the event. The hydrocarbon removal rate was high throughout the event, and was stable after the first two hours of the event.

Vapor concentrations remained greater than 100,000 parts per million by volume (PPM_V) throughout the event. The concentrations were extremely high throughout the event, and were constant.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 inches of mercury
MW-02-11	19 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-11	dry	Extraction Well

Groundwater Extraction

A total of 0 gallons of fluid were extracted from the well during this 8.0-hour event.

April 20, 2021

EFR® was performed for 8.0 hours at well MW-02-11 for this event. Separate-phase hydrocarbons (SPH) were not detected in well MW-02-11 as the well was dry prior to conducting this event, and upon conclusion of this event.

A calculated total of 453.1 pounds of petroleum hydrocarbons (approximately 74.8 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on April 20, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 70.4 pounds per hour near the beginning of the event, to a low of 46.4 pounds per hour at the end of the event. The hydrocarbon removal rate was extremely high, and decreased during the event after the first half hour.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 61,000 PPM_V at the end of the event. The concentrations were extremely high throughout the event, and decreased during the event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 inches of mercury
MW-02-11	18 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-11	dry	Extraction Well

Groundwater Extraction

A total of 0 gallons of fluid were extracted from the well during this 8.0-hour event.

April 21, 2021

EFR® was performed for 8.0 hours at well MW-02-11 for this event. Separate-phase hydrocarbons (SPH) were not detected in well MW-02-11 as the well was dry prior to conducting this event, and upon conclusion of this event.

A calculated total of 263.5 pounds of petroleum hydrocarbons (approximately 43.5 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on April 21, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 52.7 pounds per hour near the beginning of the event, to a low of 21.1 pounds per hour at the end of the event. The hydrocarbon removal rate was extremely high, and decreased during the event after the first half hour.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 30,000 PPM_V at the end of the event. The concentrations were extremely high throughout the event, and decreased during the event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 inches of mercury
MW-02-11	19 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-11	dry	Extraction Well

Groundwater Extraction
A total of 0 gallons of fluid were extracted from the well during this 8.0-hour event.

April 22, 2021

EFR® was performed for 8 hours at wells MW-02-10 and MW-04 for this event. Separate-phase hydrocarbons (SPH) were not detected in either well prior to conducting this EFR® event, as both wells were dry (mud in the bottom). SPH was not detected in either well upon conclusion of this event.

A calculated total of 140.3 pounds of petroleum hydrocarbons (approximately 23.2 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on April 22, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 33.8 pounds per hour near the beginning of the event, to a low of 8.4 pounds per hour at the end of the event. The hydrocarbon removal rate varied throughout the event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 40,000 PPM_V near the end of the event. The concentrations were high, and decreased during the event.

The range of vacuum readings recorded during this EFR® event from the monitor wells are detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	20 to 22 inches of mercury
MW-02-10	15 to 24 inches of mercury
MW-04	2 to 4 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-10	0.00 feet	Extraction Well
MW-04	0.00 feet	Extraction Well

Groundwater Extraction
A total of 0 gallons of fluid was extracted from the wells during this 8-hour event.

April 23, 2021

EFR® was performed for 8.0 hours at MW-10 for this event. Separate-phase hydrocarbons (SPH) was detected in well MW-10, at a thickness of 0.04' prior to conducting this EFR® event. SPH was not detected in well MW-10 upon conclusion of this event.

A calculated total of 221.2 pounds of petroleum hydrocarbons (approximately 36.5 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on April 23, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 33.8 pounds per hour at the beginning of the MW-10 event, to a low of 23.0 pounds per hour at the end of the MW-10 event.

Vapor concentrations varied from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the MW-10 event, to a low of 48,000 PPM_V at the end of the MW-10 event. The concentrations were very high, and decreased throughout the event.

The range of vacuum readings recorded during this EFR® event from the monitor wells are detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	19 to 20 inches of mercury
MW-10	6 to 7 inches of mercury

Groundwater Drawdown
Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-10	0.23 feet	Extraction Well

Groundwater Extraction
A total of 3 gallons of fluid were extracted from the well during this 8-hour event. The fluids were off-loaded to an aboveground tank on-site.

Hydrocarbon Mass Removal Summary

A significant amount of hydrocarbon mass in vapor form and liquid form was removed during this 5-day event. The following table summarizes the hydrocarbon mass removal totals.

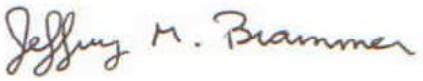
Table: Hydrocarbon Mass Removal Summary

	Hydrocarbon Mass Extraction				
Wells	Date	Vapor lbs.	Vapor Equivalent Gallons	Liquid gallons	**Total Gallons**
MW-02-11	04/19/21	256.9	42.4	0	**42.4**
MW-02-11	04/20/21	453.1	74.8	0	**74.8**
MW-02-11	04/21/21	263.5	43.5	0	**43.5**
MW-02-10 MW-04	04/22/21	140.3	23.2	0	**23.2**
MW-10	04/23/21	221.2	36.5	0	**36.5**
	Totals:	1,335	299.1	0	**220.4**

Fluid Extraction
A total of 3 gallons of fluids (3 gallons of water) was extracted and off-loaded to an on-site tank.

Thank you for this opportunity to team with Larson & Associates, Inc. in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,
EcoVac Services



Jeffrey M. Brammer, PG
Western Regional Manager, Hydrogeologist

Attachments:
1. Field Data Sheets

ATTACHMENT 1

FIELD DATA SHEETS

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 04/19/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-11								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:30														
MW-02-11	8:45	23	19								100,000	1000	49	28.2	7.0
	9:00	23	19								100,000	700	34	19.7	4.9
	9:30	23	19								100,000	600	29	16.9	8.4
	10:30	23	19								100,000	1200	59	33.8	33.8
	11:30	23	19								100,000	1200	59	33.8	33.8
	12:30	23	19								100,000	1200	59	33.8	33.8
	13:30	23	19								100,000	1200	59	33.8	33.8
	14:30	23	19								100,000	1200	59	33.8	33.8
	15:30	23	19								100,000	1200	59	33.8	33.8
	16:30	23	19								100,000	1200	59	33.8	33.8

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-11	4"	23.03	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-11	cracked	22'	Hydrocarbons (vapor):	256.9	pounds
Truck Operator:	Vitovic				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	42.4	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	8:30-16:30
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 04/20/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-11								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:45														
MW-02-11	9:00	23	18								100,000	1800	88	50.7	12.7
	9:15	23	18								100,000	2400	118	67.6	16.9
	9:45	23	18								100,000	2500	123	70.4	35.2
	10:45	23	18								91,000	2500	123	64.1	64.1
	11:45	23	18								76,000	2700	132	57.8	57.8
	12:45	23	18								74,000	2500	123	52.1	52.1
	13:45	23	18								82,000	2700	132	62.3	62.3
	14:45	23	18								72,000	2700	132	54.7	54.7
	15:45	23	18								67,000	2700	132	50.9	50.9
	16:45	23	18								61,000	2700	132	46.4	46.4

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-11	4"	23.03	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-11	cracked	22'	Hydrocarbons (vapor):	453.1	pounds
Truck Operator:	Vitovic				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	74.8	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	8:45-16:45
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 04/21/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-11								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:15														
MW-02-11	8:30	23	19								100,000	1500	74	42.2	10.6
	8:45	23	19								78,000	2400	118	52.7	13.2
	9:15	23	19								76,000	2400	118	51.4	25.7
	10:15	23	19								62,000	2200	108	38.4	38.4
	11:15	23	19								61,000	2000	98	34.4	34.4
	12:15	23	19								54,000	2200	108	33.5	33.5
	13:15	23	19								40,000	2600	127	29.3	29.3
	14:15	23	19								42,000	2500	123	29.6	29.6
	15:15	23	19								45,000	2200	108	27.9	27.9
	16:15	23	19								30,000	2500	123	21.1	21.1

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-11	4"	23.03	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-11	cracked	22'	Hydrocarbons (vapor):	263.5	pounds
Truck Operator:	Vitovic				Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	43.5	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	8:15-16:15
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 04/22/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-10	MW-04							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:15														
MW-02-10	7:30	22	24	2							100,000	1200	59	33.8	8.4
MW-04	7:45	21	16	2							100,000	1200	59	33.8	8.4
	8:15	20	15	3							78,000	1200	59	26.4	13.2
	9:15	20	15	4							40,000	750	37	8.4	8.4
	9:45	20	15	4							52,000	1500	74	22.0	11.0
	10:15	20	15	4							44,000	750	37	9.3	4.6
	11:15	20	15	4							44,000	750	37	9.3	9.3
	12:15	20	15	4							47,000	1500	74	19.9	19.9
	13:15	20	15	4							48,000	1500	74	20.3	20.3
	14:15	20	15	4							40,000	1500	74	16.9	16.9
	15:15	20	15	4							47,000	1500	74	19.9	19.9

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-10	4"	74.00	-	dry	0.00	-	dry	0.00	
MW-04	4"	60.00	-	dry	0.00	-	dry	0.00	

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-10	cracked	65'	Hydrocarbons (vapor):	140.3	pounds
Truck Operator:	Vitovic	MW-04	cracked	55'	Hydrocarbons (liquid):		gallons
Truck No.:	154				Total Hydrocarbons:	23.2	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	0	gallons

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Pump Information	
Time:	7:15-15:15
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 04/23/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-10								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:30														
MW-10	7:45	20	6								100,000	1200	59	33.8	8.4
	8:00	20	6								100,000	1200	59	33.8	8.4
	8:30	20	7								100,000	1000	49	28.2	14.1
	9:30	19	6								94,000	1250	61	33.1	33.1
	10:30	19	6								84,000	1250	61	29.6	29.6
	11:30	19	6								62,000	1500	74	26.2	26.2
	12:30	19	6								69,000	1500	74	29.1	29.1
	13:30	19	6								60,000	1500	74	25.3	25.3
	14:30	19	6								50,000	1700	83	23.9	23.9
	15:30	19	6								48,000	1700	83	23.0	23.0

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-10	4"	74.00	52.70	52.74	0.04	-	52.48	0.00	0.23

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth
Subcontractor:	EcoVac	MW-10	cracked	53'
Truck Operator:	Vitovic			
Truck No.:	154			
Vacuum Pumps:	Becker			
Pump Type:	Twin LC-44s			
Tank Capacity (gal.):	2,894			
Stack I.D. (inches)	3.0			

Recovery/Disposal Information		
Hydrocarbons (vapor):	221.2	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	36.5	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	3	gallons

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Pump Information	
Time:	7:30-15:30
# Pumps:	2
RPMs:	1,000

Notes :

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Treatability Testing/Research and Development

June 22, 2021

Mr. Mark Larson
President
Larson & Associates, Inc.
507 N Marienfeld St #205
Midland, Texas 79701-4356
Mark@laenvironmental.com

Subject: **Enhanced Fluid Recovery (EFR®) Report**
June 15 through 19, 2021
AKA Energy
Former Empire Abo Gas Processing Plant
Eddy County, Artesia, New Mexico

Dear Mr. Larson:

Please find attached the data summary for the EFR® remediation conducted at the subject site on June 15 thru 19, 2021. The EFR® remediation was implemented in numerous wells located inside the facility fence. EFR® is a mobile multi-phase/dual-phase extraction technology shown to be effective for mass removal of hydrocarbons in the soils/groundwater.

June 15, 2021

EFR® was performed for 4.0 hours at well MW-03-03, and for 4.0 hours at well MW-02-15 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-03-03 and MW-02-15, at a thickness of 0.51' and 0.30', respectively, prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 98.5 pounds of petroleum hydrocarbons (approximately 16.3 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 10 gallons of liquid phase hydrocarbons, were removed during this EFR® event on June 15, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 28.4 pounds per hour at the beginning of the MW-03-03 event, to a low of 4.8 pounds per hour at the end of the MW-02-15 event. The hydrocarbon removal rate was high throughout the MW-03-03 event, and was elevated throughout the MW-02-15 event.

Vapor concentrations ranged from a high of 56,000 parts per million by volume (PPM_V) at the beginning of the MW-03-03 event to a low of 10,000 PPMv at the end of the MW-02-15 event. The concentrations were very high throughout the MW-03-03 event and high throughout the MW-02-15 event.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 inches of mercury
MW-03-03	2 to 6 inches of mercury
MW-02-15	10 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-03-03	-0.64 feet	Extraction Well
MW-02-15	0.45 feet	Extraction Well

Groundwater Extraction

A total of 344 gallons of fluid (10 gallons of liquid phase SPH and 334 gallons of groundwater) were extracted from the wells during this 8.0-hour event.

June 16, 2021

EFR® was performed for 4.0 hours at well MW-03-02, and for 4.0 hours at well MW-03 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-03-02 and MW-03, at a thickness of 0.02' and 0.68', respectively, prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 137.4 pounds of petroleum hydrocarbons (approximately 22.7 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 10 gallons of liquid phase hydrocarbons, were removed during this EFR® event on June 16, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 33.3 pounds per hour near the end of the MW-03 event, to a low of 6.3 pounds per hour at the end of the MW-03-02 event. The hydrocarbon removal rate was high throughout the MW-03 event, and was elevated throughout the MW-03-02 event.

Vapor concentrations ranged from a high of 78,000 parts per million by volume (PPM_V) at the end of the MW-03 event to a low of 16,000 PPMv at the beginning and end of the MW-03-02

event. The concentrations were very high throughout the MW-03 event and high throughout the MW-03-02 event.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	24 to 25 inches of mercury
MW-03	11 inches of mercury
MW-03-02	8 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-03	0.05 feet	Extraction Well
MW-03-02	0.48 feet	Extraction Well

Groundwater Extraction

A total of 198 gallons of fluid (10 gallons of liquid phase SPH and 188 gallons of groundwater) were extracted from the wells during this 8.0-hour event.

June 17, 2021

EFR® was performed for 6.0 hours at wells MW-21 and MW-02-12, and for 2.0 hours at well MW-02-09 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-02-12, MW-21, and MW-02-09, at a thickness of 0.65', 2.56' and 0.97', respectively, prior to conducting this event. SPH was detected in well MW-02-09, at a thickness of 0.1', upon conclusion of this event.

A calculated total of 139.3 pounds of petroleum hydrocarbons (approximately 23.0 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 15 gallons of liquid phase hydrocarbons, were removed during this EFR® event on June 17, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 29.7 pounds per hour near the beginning of the MW-02-12 and MW-21 event, to a low of 1.5 pounds per hour at the end of the MW-02-09 event. The hydrocarbon removal rate was high throughout the MW-02-12 and MW-21 event, and was low throughout the MW-02-09 event.

Vapor concentrations ranged from a high of greater than 100,000 parts per million by volume (PPM_V) toward the end of the MW-02-12 and MW-21 event, to a low of 5,200 PPMv at the end of the MW-02-09 event. The concentrations were very high throughout the MW-02-12 and MW-21 events, and high throughout the MW-02-09 event.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 to 25 inches of mercury
MW-02-12	8 to 9 inches of mercury
MW-21	6 inches of mercury
MW-02-09	10 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-12	-0.45 feet	Extraction Well
MW-21	-0.53 feet	Extraction Well
MW-02-09	-0.34 feet	Extraction Well

Groundwater Extraction

A total of 397 gallons of fluid (15 gallons of liquid phase SPH and 382 gallons of groundwater) were extracted from the wells during this 8.0-hour event.

June 18, 2021

EFR® was performed for 4.0 hours at well MW-02-14, for 1.0 hour at well MW-02-06, and for 2.75 hours at well MW-21 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-02-14 and MW-21, at a thickness of 0.07' and 0.05', respectively, prior to conducting this event. SPH was not detected in any well upon conclusion of this event.

A calculated total of 105.2 pounds of petroleum hydrocarbons (approximately 17.4 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on June 18, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 28.2 pounds per hour at the beginning of the MW-02-06 and throughout the MW-21 event, to a low of 0.6 pounds per hour at the beginning of the MW-02-14 event. The hydrocarbon removal rate was high throughout the MW-02-06 and MW-21 events, and was low throughout the MW-02-14 event.

Vapor concentrations ranged from a high of greater than 100,000 parts per million by volume (PPM_V) throughout the MW-21 event, to a low of 1,600 PPMv at the beginning of the MW-02-14 event. The concentrations were very high throughout the MW-02-06 and MW-21 events, and relatively low throughout the MW-02-14 event.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 to 25 inches of mercury
MW-02-14	11 to 12 inches of mercury
MW-02-06	20 inches of mercury
MW-21	9 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-14	-0.78 feet	Extraction Well
MW-02-06	0.19 feet	Extraction Well
MW-21	0.99 feet	Extraction Well

Groundwater Extraction

A total of 174 gallons of fluid (0 gallons of liquid phase SPH and 174 gallons of groundwater) were extracted from the wells during this 8.0-hour event.

June 19, 2021

EFR® was performed for 4.0 hours at wells EB-03 and MW-14, and for 4.0 hours at well EB-08 for this event. Separate-phase hydrocarbons (SPH) were detected in wells EB-03, MW-14, and EB-08, at a thickness of 0.30', 0.09' and 0.19', respectively, prior to conducting this event. SPH was not detected in any well upon conclusion of this event.

A calculated total of 80.8 pounds of petroleum hydrocarbons (approximately 13.3 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 5 gallons of liquid phase hydrocarbons, were removed during this EFR® event on June 19, 2021.

The hydrocarbon vapor extraction removal rate varied from a high of 15.8 pounds per hour at the end of the EB-08 event, to a low of 6.8 pounds per hour at the beginning of the EB-08 event. The hydrocarbon removal rate was slightly elevated throughout the both events.

Vapor concentrations ranged from a high 60,000 parts per million by volume (PPM_V) at the beginning of the EB-03 and MW-14 event, to a low of 16,000 PPMv at the beginning of the EB-08 event. The concentrations were very high throughout the both events.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	20 to 25 inches of mercury
EB-03	4 to 5 inches of mercury
MW-14	5 inches of mercury
EB-08	12 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
EB-03	-0.72 feet	Extraction Well
MW-14	0.06 feet	Extraction Well
EB-08	0.10 feet	Extraction Well

Groundwater Extraction

A total of 53 gallons of fluid (5 gallons of liquid phase SPH and 48 gallons of groundwater) were extracted from the wells during this 8.0-hour event.

Hydrocarbon Mass Removal Summary

A significant amount of hydrocarbon mass in vapor form and liquid form was removed during this 5-day event. The following table summarizes the hydrocarbon mass removal totals.

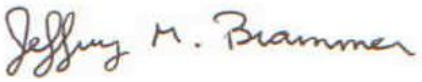
Table: Hydrocarbon Mass Removal Summary

	Hydrocarbon Mass Extraction				
Wells	Date	Vapor lbs.	Vapor Equivalent Gallons	Liquid gallons	**Total Gallons**
MW-03-03 MW-02-15	06/15/21	98.5	16.3	10	**26.3**
MW-03-02 MW-03	06/16/21	137.4	22.7	10	**32.7**
MW-02-12 MW-21 MW-02-09	06/17/21	139.3	23.0	15	**38.0**
MW-02-14 MW-02-06 MW-21	06/18/21	105.2	17.4	0	**17.4**
EB-03 MW-14 EB-08	06/19/21	80.8	13.3	5	**18.3**
	Totals:	561.2	92.7	40	**132.7**

Fluid Extraction
A total of 1,166 gallons of fluids (1,121 gallons of water and 45 gallons of liquid phase hydrocarbons) was extracted and off-loaded to an on-site tank.

Thank you for this opportunity to team with Larson & Associates, Inc. in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,
EcoVac Services



Jeffrey M. Brammer, PG
Western Regional Manager, Hydrogeologist

Attachments:
1. Field Data Sheets

ATTACHMENT 1

FIELD DATA SHEETS

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Mosley	Date: 06/15/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-03-03	Mw-02-15							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	8:30														
MW-03-03	8:50	23	2								56,000	1800	88	28.4	7.1
(227 gals)	9:30	23	5								32,000	2100	103	18.9	12.6
	10:30	23	5								24,000	1800	88	12.2	12.2
	11:30	23	6								30,000	1800	88	15.2	15.2
	12:30	23	6								40,000	2100	103	23.7	23.7
	12:35														
MW-02-15	13:00	23		10							20,000	1700	83	9.6	4.0
(117 gals)	13:30	23		10							22,000	1800	88	11.2	5.6
	14:30	23		10							16,000	1700	83	7.7	7.7
	15:30	23		10							12,000	1700	83	5.7	5.7
	16:30	23		10							10,000	1700	83	4.8	4.8

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-03-03	4"		75.88	76.39	0.51	-	76.60	0.00	-0.64
MW-02-15	4"		71.20	71.50	0.30	-	70.79	0.00	0.45

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth
Subcontractor:	EcoVac	MW-03-03	cracked	77'
Truck Operator:	Vitovic	MW-02-15	cracked	72'
Truck No.:	154			
Vacuum Pumps:	Becker			
Pump Type:	Twin LC-44s			
Tank Capacity (gal.):	2,894			
Stack I.D. (inches)	3.0			

Recovery/Disposal Information		
Hydrocarbons (vapor):	98.5	pounds
Hydrocarbons (liquid):	10.0	gallons
Total Hydrocarbons:	26.3	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	344	gallons

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Pump Information	
Time:	8:30-16:30
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Mosley	Date: 06/16/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
Start Time:	7:15	Inlet	MW-03-02	Mw-03							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
MW-03-02	7:45	25	8								16,000	1700	83	7.7	1.9
(175 gals)	8:15	25	8								16,000	1500	74	6.8	3.4
	9:15	24	8								18,000	1500	74	7.6	7.6
	10:15	24	8								18,000	1400	69	7.1	7.1
	11:15	24	8								16,000	1400	69	6.3	6.3
	11:30	25													
MW-03	11:45	25		11							34,000	1500	74	14.4	3.6
(23 gals)	12:15	25		11							50,000	1500	74	21.1	10.6
	13:15	25		11							68,000	1600	78	30.6	30.6
	14:15	25		11							74,000	1600	78	33.3	33.3
	15:15	25		11							78,000	1500	74	32.9	32.9

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-03-02	4"		74.58	74.60	0.02	-	74.10	0.00	0.48
MW-03	4"		85.44	86.12	0.68	-	85.49	0.00	0.05

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-03-02	cracked	75'	Hydrocarbons (vapor):	137.4	pounds
Truck Operator:	Vitovic	MW-03	cracked	86'	Hydrocarbons (liquid):	10.0	gallons
Truck No.:	154				Total Hydrocarbons:	32.7	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	198	gallons

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Pump Information	
Time:	7:15-15:15
# Pumps:	2
RPMs:	1,000

Notes :

5 gallons liquid phase from 06/15&16/21

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Mosley	Date: 06/17/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-21	MW-02-12	MW-02-09						Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:15														
MW-21	7:45	24	6	8							82,000	1200	59	27.7	6.9
MW-02-12	8:15	23	6	9							88,000	1200	59	29.7	14.9
(172 gals)	9:15	23	6	9							10,000	1100	54	3.1	3.1
	10:15	23	6	9							94,000	1000	49	26.5	26.5
	11:15	23	6	9							94,000	1000	49	26.5	26.5
	12:15	23	6	9							100,000	1000	49	28.2	28.2
MW-02-09	13:15	23	6	9							100,000	1000	49	28.2	28.2
(207 gals)	13:45	24			10						16,000	1000	49	4.5	2.3
	14:15	25			10						10,000	1000	49	2.8	1.4
	15:15	25			10						5,200	1000	49	1.5	1.5

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-21	4"		74.78	77.34	2.56	-	75.69	0.00	-0.53
MW-02-12	4"		75.18	75.83	0.65	-	75.73	0.00	-0.45
MW-02-09	4"		36.33	37.30	0.97	36.80	36.90	0.10	-0.34

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-21	cracked	76'	Hydrocarbons (vapor):	139.3	pounds
Truck Operator:	Vitovic	MW-02-12	cracked	76'	Hydrocarbons (liquid):	15.0	gallons
Truck No.:	154	MW-02-09	cracked	37'	Total Hydrocarbons:	38.0	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	397	gallons

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Pump Information	
Time:	7:15-15:15
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Mosley	Date: 06/18/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
Start Time:	7:30	Inlet	MW-02-14	MW-02-06	MW-21						Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
MW-02-14	8:00	25	11								1,600	1400	69	0.6	0.2
(125 gals)	8:30	25	11								1,600	1400	69	0.6	0.3
	9:30	25	11								1,800	1300	64	0.7	0.7
	10:30	25	12								1,800	1300	64	0.7	0.7
	11:30	25	12								1,800	1300	64	0.7	0.7
MW-02-06	12:00	25		20							50,000	2000	98	28.2	14.1
(32 gals)	12:30	25		20							40,000	2000	98	22.5	11.3
	12:45														
MW-21	13:00	23			9						100,000	1000	49	28.2	7.0
(14 gals)	13:30	23			9						100,000	1000	49	28.2	14.1
	14:30	23			9						100,000	1000	49	28.2	28.2
	15:30	23			9						100,000	1000	49	28.2	28.2

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-14	4"		68.89	68.96	0.07	-	69.68	0.00	-0.78
MW-02-06	4"		-	22.64	0.00	-	22.45	0.00	0.19
MW-21	4"		75.30	75.35	0.05	-	74.32	0.00	0.99

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	MW-02-14	cracked	70'	Hydrocarbons (vapor):	105.2	pounds
Truck Operator:	Vitovic	MW-02-06	cracked	23'	Hydrocarbons (liquid):	0.0	gallons
Truck No.:	154	MW-21	cracked	74'	Total Hydrocarbons:	17.4	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	174	gallons

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Pump Information

Time:	7:30-15:30
# Pumps:	2
RPMs:	1,000

Notes :

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Mosley	Date: 06/19/2021

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	EB-03	MW-14	EB-08						Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:15														
EB-03	7:45	21	5	5							60,000	700	34	11.8	3.0
MW-14	8:15	20	4	5							46,000	700	34	9.1	4.5
	9:15	20	4	5							50,000	700	34	9.9	9.9
	10:15	20	4	5							46,000	700	34	9.1	9.1
	11:15	20	4	5							40,000	700	34	7.9	7.9
	11:30														
EB-08	11:45	25			12						16,000	1500	74	6.8	1.7
	12:15	25			12						22,000	1500	74	9.3	4.6
	13:15	25			12						28,000	1500	74	11.8	11.8
	14:15	25			12						32,000	1400	69	12.6	12.6
	15:15	25			12						40,000	1400	69	15.8	15.8

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
EB-03	2"		67.17	67.47	0.30	-	67.93	0.00	-0.72
MW-14	4"		67.30	67.39	0.09	-	67.25	0.00	0.06
EB-08	2"		79.83	80.02	0.19	-	79.76	0.00	0.10

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth	**Recovery/Disposal Information**		
Subcontractor:	EcoVac	EB-03	cracked	68'	Hydrocarbons (vapor):	80.8	pounds
Truck Operator:	Vitovic	MW-14	cracked	68'	Hydrocarbons (liquid):	5.0	gallons
Truck No.:	154	EB-08	cracked	81'	Total Hydrocarbons:	18.3	equiv. gals.
Vacuum Pumps:	Becker				Molecular Weight Utilized:	36.3	g/mole
Pump Type:	Twin LC-44s				Disposal Facility:	On-Site	
Tank Capacity (gal.):	2,894				Manifest Number:		
Stack I.D. (inches)	3.0				Total Liquids Removed:	53	gallons

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Pump Information	
Time:	7:15-15:15
# Pumps:	2
RPMs:	1,000

Notes :

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January 11, 2022

Mr. Mark Larson
President
Larson & Associates, Inc.
507 N Marienfeld St #205
Midland, Texas 79701-4356
Mark@laenvironmental.com

Subject: **Enhanced Fluid Recovery (EFR®) Report**
January 04 through 08, 2022
AKA Energy
Former Empire Abo Gas Processing Plant
Eddy County, Artesia, New Mexico

Dear Mr. Larson:

Please find attached the data summary for the EFR® remediation conducted at the subject site on January 04 thru 08, 2022. The EFR® remediation was implemented in numerous wells located inside the facility fence. EFR® is a mobile multi-phase/dual-phase extraction technology shown to be effective for mass removal of hydrocarbons in the soils/groundwater.

January 04, 2022

EFR® was performed for 5.5 hours at well MW-21 for this event. Separate-phase hydrocarbons (SPH) were detected in well MW-21, at a thickness of 5.18' prior to conducting this event. SPH was not detected in well MW-21 upon conclusion of this event.

A calculated total of 480.1 pounds of petroleum hydrocarbons (approximately 79.2 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on January 04, 2022.

The hydrocarbon vapor extraction removal rate varied from a high of 143.2 pounds per hour 1 hour into the event, to a low of 52.4 pounds per hour at the beginning of the event. The hydrocarbon removal rate was extremely high throughout the event.

Vapor concentrations ranged from a high of greater than 100,000 parts per million by volume (PPM_V) at various times throughout the event, to a low of 50,000 PPMv at the beginning of the event. The concentrations were very high throughout event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	23 to 24 inches of mercury
MW-21	10 to 12 inches of mercury

Vacuum Influence

The differential pressure data are detailed in the Field Data Sheets in Attachment 1. Differential pressures from the nearest monitor wells were recorded during this event to assess the vacuum induced by EFR® in the vadose zone. A vacuum influence was observed after two hours of extraction at a distance of 150 feet south from well MW-21 in MW-20. A vacuum influence was not observed in any of the other 5 wells monitored at a distance of 135 to 495 feet. The differential pressure data are detailed in the attached table and summarized below:

Monitor Well	Maximum Change	Nearest Extraction Well (Approx. Distance)
MW-05	0.00 inches of water	MW-21 (135 feet)
MW-02-09	0.00 inches of water	MW-21 (495 feet)
MW-02-10	0.00 inches of water	MW-21 (220 feet)
MW-02-11	0.00 inches of water	MW-21 (180 feet)
MW-02-18	0.00 inches of water	MW-21 (230 feet)
MW-20	-0.81 inches of water	MW-21 (150 feet)

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-21	-3.77 feet	Extraction Well
MW-05	0.13 feet	MW-21 (135 feet)
MW-02-09	0.10 feet	MW-21 (495 feet)
MW-02-10	-0.06 feet	MW-21 (220 feet)
MW-02-11	Dry	MW-21 (180 feet)
MW-02-18	0.22 feet	MW-21 (230 feet)
MW-20	0.12 feet	MW-21 (150 feet)

Groundwater Extraction
A total of 68 gallons of fluid were extracted from the well during this 5.5-hour event.

January 05, 2022

EFR® was performed for 9.5 hours at wells MW-21 and MW-02-12 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-21 and MW-02-12, at a thickness of 0.06' and 7.02 feet, respectively prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 756.9 pounds of petroleum hydrocarbons (approximately 124.9 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on January 05, 2022.

The hydrocarbon vapor extraction removal rate varied from a high of 112.3 pounds per hour at the beginning of the event, to a low of 52.0 pounds per hour near the middle of the event. The hydrocarbon removal rate was extremely high throughout the event.

Vapor concentrations ranged from a high of greater than 100,000 parts per million by volume (PPM_V) at various times throughout the event, to a low of 60,000 PPMv a couple of times during the event. The concentrations were very high throughout event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	22 to 24 inches of mercury
MW-21	12 to 13 inches of mercury
MW-02-12	9 to 10 inches of mercury

Vacuum Influence
The differential pressure data are detailed in the Field Data Sheets in Attachment 1. Differential pressures from the nearest monitor wells were recorded during this event to assess the vacuum induced by EFR® in the vadose zone. A vacuum influence was observed after one hour of extraction at a distance of 150 feet south from well MW-21 in MW-20. A vacuum influence may have been observed during the middle of the event at a distance of 220 feet NW from MW-21 and MW-02-12, in MW-02-10. A vacuum influence was not observed in any of the other 3 wells monitored at a distance of 135 to 230 feet. The differential pressure data are detailed in the attached table and summarized below:

Monitor Well	Maximum Change	Nearest Extraction Well (Approx. Distance)
MW-05	0.00 inches of water	MW-21 (135 feet)
MW-02-10	-0.18 inches of water	MW-21 (220 feet)

MW-02-11	0.00 inches of water	MW-21 (180 feet)
MW-02-18	0.00 inches of water	MW-21 (230 feet)
MW-20	-0.32 inches of water	MW-21 (150 feet)

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-21	-1.69 feet	Extraction Well
MW-02-12	-0.48 feet	Extraction Well
MW-05	0.15 feet	MW-21 (135 feet)
MW-02-10	0.00 feet	MW-21 (220 feet)
MW-02-11	Dry	MW-21 (180 feet)
MW-02-18	0.03 feet	MW-21 (230 feet)
MW-20	0.16 feet	MW-21 (150 feet)

Groundwater Extraction

A total of 361 gallons of fluid were extracted from the well during this 9.5-hour event.

January 06, 2022

EFR® was performed for 9.5 hours at wells MW-21 and MW-02-12 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-21 and MW-02-12, at a thickness of 0.02' and 0.04 feet, respectively prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 704.1 pounds of petroleum hydrocarbons (approximately 116.2 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on January 06, 2022.

The hydrocarbon vapor extraction removal rate varied from a high of 116.9 pounds per hour near the middle of the event, to a low of 49.5 pounds per hour near the end of the event. The hydrocarbon removal rate was extremely high throughout the event.

Vapor concentrations ranged from a high of greater than 100,000 parts per million by volume (PPM_V) at the beginning of the event, to a low of 52,000 PPMv at the end of the event. The concentrations were very high throughout event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	21 to 23 inches of mercury
MW-21	8 to 11 inches of mercury
MW-02-12	10 to 11 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-21	-1.40 feet	Extraction Well
MW-02-12	-1.74 feet	Extraction Well

Groundwater Extraction

A total of 257 gallons of fluid were extracted from the well during this 9.5-hour event.

January 07, 2022

EFR® was performed for 9.75 hours at wells MW-21 and MW-02-12 for this event. Separate-phase hydrocarbons (SPH) were detected in well MW-21, at a thickness of 0.02', prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 720.5 pounds of petroleum hydrocarbons (approximately 118.9 equivalent gallons of hydrocarbon) in vapor concentrations were removed during this EFR® event on January 07, 2022.

The hydrocarbon vapor extraction removal rate varied from a high of 97.6 pounds per hour 2.5 hours into the event, to a low of 41.5 pounds per hour at the beginning of the event. The hydrocarbon removal rate was extremely high throughout the event.

Vapor concentrations ranged from a high of 72,000 parts per million by volume (PPM_V) toward the beginning of the event, to a low of 48,000 PPMv at the end of the event. The concentrations were very high throughout event.

The range of vacuum readings recorded during this EFR® event from the monitor well is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	21 to 24 inches of mercury
MW-21	11 to 13 inches of mercury

MW-02-12	11 to 13 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-21	-1.19 feet	Extraction Well
MW-02-12	-1.27 feet	Extraction Well

Groundwater Extraction

A total of 384 gallons of fluid were extracted from the well during this 9.5-hour event.

Liquid Phase – January 04-07, 2022

Liquid phase hydrocarbon was gauged in the truck on the morning of January 08, 2022, prior to start of the day. EcoVac gauged 1,035 gallons of an emulsion in the tank, accumulated from the 4-days of extraction at MW-21 and MW-02-12. EcoVac estimates that 25% of the emulsion was liquid phase hydrocarbon, therefore, approximately 260 gallons of liquid phase hydrocarbon had been extracted over the 4-day period.

January 08, 2022

EFR® was performed for 2.5 hours at well MW-02-15, and for 3.0 hours at well MW-14 for this event. Separate-phase hydrocarbons (SPH) were detected in wells MW-02-15 and MW-14, at a thickness of 1.30’ and 1.91’, respectively, prior to conducting this event. SPH was not detected in either well upon conclusion of this event.

A calculated total of 70.7 pounds of petroleum hydrocarbons (approximately 11.7 equivalent gallons of hydrocarbon) in vapor concentrations, in addition to 10 gallons of liquid phase hydrocarbon from MW-02-15, and 15 gallons from MW-14, were removed during this EFR® event on January 08, 2022.

The hydrocarbon vapor extraction removal rate varied from a high of 36.9 pounds per hour during the MW-02-15 event, to a low of 6.2 pounds per hour at the beginning of the MW-14 event. The hydrocarbon removal rate was elevated throughout both events.

Vapor concentrations ranged from a high 30,000 parts per million by volume (PPM_V) at the beginning of the MW-02-15 event, to a low of 10,000 PPMv near the end of the MW-14 event. The concentrations were high throughout both events.

The range of vacuum readings recorded during this EFR® event from the monitor wells is detailed in the attached EFR® Field Data Sheet and summarized below:

Extraction Well	Vacuum Readings
Truck	24 to 25 inches of mercury
MW-02-15	10 inches of mercury
MW-14	5 to 6 inches of mercury

Groundwater Drawdown

Groundwater levels were recorded during this event to assess the groundwater drawdown created by EFR®. The groundwater drawdown data is summarized below:

Monitor Well	Maximum Change	Well Type
MW-02-15	-2.91 feet	Extraction Well
MW-14	-2.24 feet	Extraction Well

Groundwater Extraction

A total of 161 gallons of fluid (25 gallons of liquid phase SPH and 136 gallons of groundwater) were extracted from the wells during this 5.5-hour event.

Hydrocarbon Mass Removal Summary

A significant amount of hydrocarbon mass in vapor form and liquid form was removed during this 5-day event. The following table summarizes the hydrocarbon mass removal totals.

Table: Hydrocarbon Mass Removal Summary

	Hydrocarbon Mass Extraction				
Wells	Date	Vapor lbs.	Vapor Equivalent Gallons	Liquid gallons	**Total Gallons**
MW-21	01/04/22	480.1	79.2		**79.2**
MW-21 MW-02-12	01/05/22	756.9	124.9		**124.9**
MW-02-12 MW-21	01/06/22	704.1	116.2		**116.2**
MW-02-12 MW-21	01/07/22	720.5	118.9	260*	**378.9****
MW-02-15 MW-14	01/08/22	70.7	11.7	25	**36.7**

Totals:	2,732.3	450.9	285	**735.9**

* - 4-day liquid phase hydrocarbon total for 01/04-07/22
** - includes 4-day liquid phase hydrocarbon total for 01/04-07/22

Fluid Extraction
A total of 1,231 gallons of fluids (946 gallons of water and 285 gallons of liquid phase hydrocarbons) was extracted and off-loaded to an on-site tank.

Thank you for this opportunity to team with Larson & Associates, Inc. in serving the environmental needs of your clients. We look forward to working with you again in the future to provide innovative and cost effective environmental solutions at this and other sites.

Sincerely,
EcoVac Services

Jeffrey M. Brammer, PG
Western Regional Manager, Hydrogeologist

Attachments:
1. Field Data Sheets

ATTACHMENT 1

FIELD DATA SHEETS

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 01/04/2022

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-21								Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	11:30														
MW-21	11:45	23	10								50,000	3721	182	52.4	13.1
	12:00	23	12								72,000	4480	220	90.8	22.7
	12:15	23	12								68,000	5083	249	97.3	24.3
	12:30	23	12								100,000	5085	249	143.2	35.8
	13:00	23	12								80,000	3000	147	67.6	33.8
	13:30	23	12								100,000	3063	150	86.3	43.1
	14:30	24	12								100,000	3285	161	92.5	92.5
	15:30	24	12								88,000	3735	183	92.6	92.6
	16:00	24	12								80,000	3657	179	82.4	41.2
	17:00	24	12								100,000	2875	141	81.0	81.0

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-21	4"		71.23	76.41	5.18	-	75.78	0.00	-3.77
MW-02-10	4"		-	74.52	0.00	-	74.58	0.00	-0.06
MW-02-11	4"		-	dry	0.00	-	dry	0.00	
MW-02-18	4"		-	23.12	0.00	-	22.90	0.00	0.22
MW-05	4"		-	73.57	0.00	-	73.44	0.00	0.13
MW-20	4"		-	74.60	0.00	-	74.48	0.00	0.12
MW-02-09	4"		-	36.38	0.00	-	36.28	0.00	0.10

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth
Subcontractor:	EcoVac	MW-21	closed	73'/75'/77'
Truck Operator:	Mosley			
Truck No.:	150			
Vacuum Pumps:	Becker			
Pump Type:	Twin LC-44s			
Tank Capacity (gal.):	2,894			
Stack I.D. (inches)	3.0			

Recovery/Disposal Information		
Hydrocarbons (vapor):	480.1	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	79.2	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	68	gallons

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Pump Information	
Time:	11:30-17:00
# Pumps:	2
RPMs:	1,000

Notes :
1. lowered stinger to 75' after 12:30 measurements
2. lowered stiinger to 77' after 14:30 measurements

Onsite: 8:00

Differential Pressure and Groundwater Drawdown Data Recorded During EFR®
January 4, 2022
AKA Energy - Empire Abo Gas Plant
Eddy County, Artesia, NM

DIFFERENTIAL PRESSURE DATA

		Well Designation:					
		MW-02-10	MW-02-11	MW-02-18	MW-05	MW-20	MW-02-09
Nearest Extraction Well:		MW-21	MW-21	MW-21	MW-21	MW-21	MW-21
Approximate Distance:		220 feet	180 feet	230 feet	135 feet	150 feet	495 feet
Time	Elapsed Time	Differential Pressures (inches of water):					
12:00	0.5 hrs.	0.00	0.00	0.00	0.00	0.00	0.00
12:30	1.0 hr.	0.00	0.00	0.00	0.00	0.00	0.00
13:00	1.5 hrs.	0.00	0.00	0.00	0.00	0.00	0.00
13:30	2.0 hrs.	0.00	0.00	0.00	0.00	0.00	0.00
14:30	3.0 hrs.	0.00	0.00	0.00	0.00	-0.38	0.00
15:30	4.0 hrs.	0.00	0.00	0.00	0.00	-0.50	0.00
16:30	5.0 hrs.	0.00	0.00	0.00	0.00	-0.81	0.00
17:00	5.5 hrs.	0.00	0.00	0.00	0.00	-0.78	0.00
Maximum Change:		0.00	0.00	0.00	0.00	-0.81	0.00

GROUNDWATER DRAWDOWN DATA

		Well Designation:					
		MW-02-10	MW-02-11	MW-02-18	MW-05	MW-21	MW-02-09
Nearest Extraction Well:		MW-21	MW-21	MW-21	MW-21	MW-21	MW-21
Approximate Distance:		220 feet	180 feet	230 feet	135 feet	150 feet	495 feet
Time	Elapsed Time	Depth to Liquid (feet below top of casing):					
Prior to EFR®		74.52	dry	23.12	73.57	74.6	36.28
After EFR®		74.58	dry	22.9	73.44	74.48	36.28
Maximum Change:		-0.06		0.22	0.13	0.12	0.00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 01/05/2022

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-21	MW-02-12							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:30														
MW-21	8:00	22	12								80,000	4985	244	112.3	56.1
	8:30	22	13								78,000	3578	175	78.6	39.3
add	9:30	22	13								100,000	3460	170	97.4	97.4
MW-02-12	10:30	22	12	9							80,000	3980	195	89.7	89.7
	11:30	22	12	9							85,000	2987	146	71.5	71.5
	12:30	22	12	9							60,000	3080	151	52.0	52.0
	13:30	22	12	9							70,000	4238	208	83.5	83.5
	14:30	24	13	10							70,000	4385	215	86.4	86.4
	15:30	24	13	10							60,000	4080	200	68.9	68.9
	16:30	24		10							100,000	2685	132	75.6	75.6
	17:00	24		10							100,000	2580	126	72.6	36.3

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-21	4"		73.28	73.34	0.06	-	74.98	0.00	-1.69
MW-02-10	4"		-	74.80	0.00	-	74.80	0.00	0.00
MW-02-11	4"	23.10	-	dry	0.00	-	dry	0.00	
MW-02-18	4"		-	23.12	0.00	-	23.09	0.00	0.03
MW-05	4"		-	73.55	0.00	-	73.40	0.00	0.15
MW-20	4"		-	74.65	0.00	-	74.49	0.00	0.16
MW-02-12	4"		72.93	79.95	7.02	-	74.46	0.00	-0.48

Vacuum Truck Information	
Subcontractor:	EcoVac
Truck Operator:	Mosley
Truck No.:	150
Vacuum Pumps:	Becker
Pump Type:	Twin LC-44s
Tank Capacity (gal.):	2,894
Stack I.D. (inches)	3.0

Well ID	Breather Port	Stinger Depth
MW-21	closed	75'/77'
MW-02-12	closed	75'

Recovery/Disposal Information		
Hydrocarbons (vapor):	756.9	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	124.9	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	361	gallons

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Pump Information	
Time:	7:30-17:00
# Pumps:	2
RPMs:	1,000

Notes :
1. lowered stinger in MW-21 to 77' after 8:00 measurements
2. appears to be an obstruction at 74.8' in MW-02-10

Onsite: 7:00

Differential Pressure and Groundwater Drawdown Data Recorded During EFR®
January 5, 2022
AKA Energy - Empire Abo Gas Plant
Eddy County, Artesia, NM

DIFFERENTIAL PRESSURE DATA

		Well Designation:				
		MW-02-10	MW-02-11	MW-02-18	MW-05	MW-20
Nearest Extraction Well:		MW-21	MW-21	MW-21	MW-21	MW-21
Approximate Distance:		220 feet	180 feet	230 feet	135 feet	150 feet
Time	Elapsed Time	Differential Pressures (inches of water):				
8:30	1.0 hr.	0.00	0.00	0.00	0.00	0.00
9:30	2.0 hrs.	0.00	0.00	0.00	0.00	-0.21
10:30	3.0 hrs.	0.00	0.00	0.00	0.00	-0.19
11:30	4.0 hrs.	0.00	0.00	0.00	0.00	-0.19
12:30	5.0 hrs.	-0.18	0.00	0.00	0.00	-0.19
13:30	6.0 hrs.	-0.16	0.00	0.00	0.00	-0.20
14:30	7.0 hrs.	0.00	0.00	0.00	0.00	-0.32
15:30	8.0 hrs.	0.00	0.00	0.00	0.00	-0.23
16:30	9.0 hrs.	0.00	0.00	0.00	0.00	-0.20
Maximum Change:		-0.18	0.00	0.00	0.00	-0.32

GROUNDWATER DRAWDOWN DATA

		Well Designation:				
		MW-02-10	MW-02-11	MW-02-18	MW-05	MW-20
Nearest Extraction Well:		MW-21	MW-21	MW-21	MW-21	MW-21
Approximate Distance:		220 feet	180 feet	230 feet	135 feet	150 feet
Time	Elapsed Time	Depth to Liquid (feet below top of casing):				
Prior to EFR®		74.8	dry	23.12	73.55	74.65
After EFR®		74.8	dry	23.09	73.40	74.49
Maximum Change:		0.00		0.03	0.15	0.16

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 01/06/2022

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-12	MW-21							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:30														
MW-02-12	8:00	23	10								100,000	3648	179	102.7	51.4
add	8:30	23	10								89,000	3368	165	84.4	42.2
MW-21	9:30	21	11	9							87,000	3143	154	77.0	77.0
	10:30	21	11	8							85,000	4886	239	116.9	116.9
	11:30	21	11	9							70,000	4026	197	79.4	79.4
	12:30	21	11	9							73,000	3402	167	69.9	69.9
	13:30	22	10	11							60,000	3694	181	62.4	62.4
	14:30	22	10	11							60,000	4276	210	72.2	72.2
	15:30	22	10	11							58,000	3486	171	56.9	56.9
	16:30	22	10	11							54,000	3258	160	49.5	49.5
	17:00	22	10	11							52,000	3580	175	52.4	26.2

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-12	4"		74.43	74.47	0.04	-	76.18	0.00	-1.74
MW-21	4"		74.00	74.02	0.02	-	75.40	0.00	-1.40

Vacuum Truck Information	
Subcontractor:	EcoVac
Truck Operator:	Mosley
Truck No.:	150
Vacuum Pumps:	Becker
Pump Type:	Twin LC-44s
Tank Capacity (gal.):	2,894
Stack I.D. (inches)	3.0

Well ID	Breather Port	Stinger Depth
MW-21	closed	77'
MW-02-12	closed	77'

Recovery/Disposal Information		
Hydrocarbons (vapor):	704.1	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	116.2	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	257	gallons

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Pump Information	
Time:	7:30-17:00
# Pumps:	2
RPMs:	1,000

Notes :

Onsite: 7:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 01/07/2022

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-12	MW-21							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:15														
MW-02-12	7:45	21	11	11							60,000	2458	120	41.5	20.8
MW-21	8:15	21	11	11							70,000	4298	211	84.7	42.4
	8:45	21	11	11							72,000	4115	202	83.4	41.7
	9:45	21	11	11							70,000	4950	243	97.6	97.6
	10:45	24	13	13							60,000	4866	238	82.2	82.2
	11:45	24	13	13							58,000	4466	219	72.9	72.9
	12:45	24	13	13							58,000	4694	230	76.7	76.7
	13:45	24	13	13							56,000	4777	234	75.3	75.3
	14:45	24	13	13							52,000	4716	231	69.1	69.1
	15:45	24	13	13							50,000	4685	230	66.0	66.0
	17:00	24	13	13							48,000	4495	220	60.8	75.9

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-12	4"		-	74.68	0.00	-	75.95	0.00	-1.27
MW-21	4"		74.29	74.31	0.02	-	75.48	0.00	-1.19

Vacuum Truck Information	
Subcontractor:	EcoVac
Truck Operator:	Mosley
Truck No.:	150
Vacuum Pumps:	Becker
Pump Type:	Twin LC-44s
Tank Capacity (gal.):	2,894
Stack I.D. (inches)	3.0

Well ID	Breather Port	Stinger Depth
MW-21	closed	77'
MW-02-12	closed	77'

Recovery/Disposal Information		
Hydrocarbons (vapor):	720.5	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	118.9	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	384	gallons

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Pump Information	
Time:	7:15-17:00
# Pumps:	2
RPMs:	1,000

Notes :

Onsite: 7:00

EFR® FIELD DATA SHEET

Client: Larson & Associates	Facility: AKA Energy - Former Empire Abo Gas Plant	Event #
Facility Address : Eddy County, Artesia, NM	Technician: Brammer	Date: 01/08/2022

Extraction Well(s)	Time hh:mm	Extraction Well-head Vacuum (in. Hg)									Vacuum Truck Exhaust				
		Inlet	MW-02-15	MW-14							Concentration PPM	Offgas Velocity FT/MIN	Flow Rate CFM	Removal Rate LBS/HR	Interval Removal LBS
Start Time:	7:15														
MW-02-15	7:45	24	10								30,000	1379	68	11.6	5.8
(107 gals)	8:15	24	10								30,000	4369	214	36.9	18.5
	9:15	24	10								20,000	2130	104	12.0	12.0
	9:45	24	10								16,000	2516	123	11.3	5.7
	10:00														
MW-14	10:30	25		5							14,000	1584	78	6.2	3.1
(54 gals)	11:00	25		5							12,000	2892	142	9.8	4.9
	12:00	25		6							10,000	2592	127	7.3	7.3
	13:00	25		6							16,000	2984	146	13.4	13.4

Well Gauging Data:			Before EFR® Event			After EFR® Event			Corr. DTW
Well No.	Diam.	TD (ft)	DTS (ft)	DTW (ft)	SPH (ft)	DTS (ft)	DTW (ft)	SPH (ft)	Change (ft)
MW-02-15	4"		67.50	68.80	1.30	-	70.60	0.00	-2.91
MW-14	4"		65.31	67.22	1.91	-	67.84	0.00	-2.24

Vacuum Truck Information		Well ID	Breather Port	Stinger Depth
Subcontractor:	EcoVac	MW-02-15	closed	72'
Truck Operator:	Mosley	MW-14	closed	67'/69'
Truck No.:	150			
Vacuum Pumps:	Becker			
Pump Type:	Twin LC-44s			
Tank Capacity (gal.):	2,894			
Stack I.D. (inches)	3.0			

Recovery/Disposal Information		
Hydrocarbons (vapor):	70.7	pounds
Hydrocarbons (liquid):		gallons
Total Hydrocarbons:	11.7	equiv. gals.
Molecular Weight Utilized:	36.3	g/mole
Disposal Facility:	On-Site	
Manifest Number:		
Total Liquids Removed:	161	gallons

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Pump Information	
Time:	7:15-13:00
# Pumps:	2
RPMs:	1,000

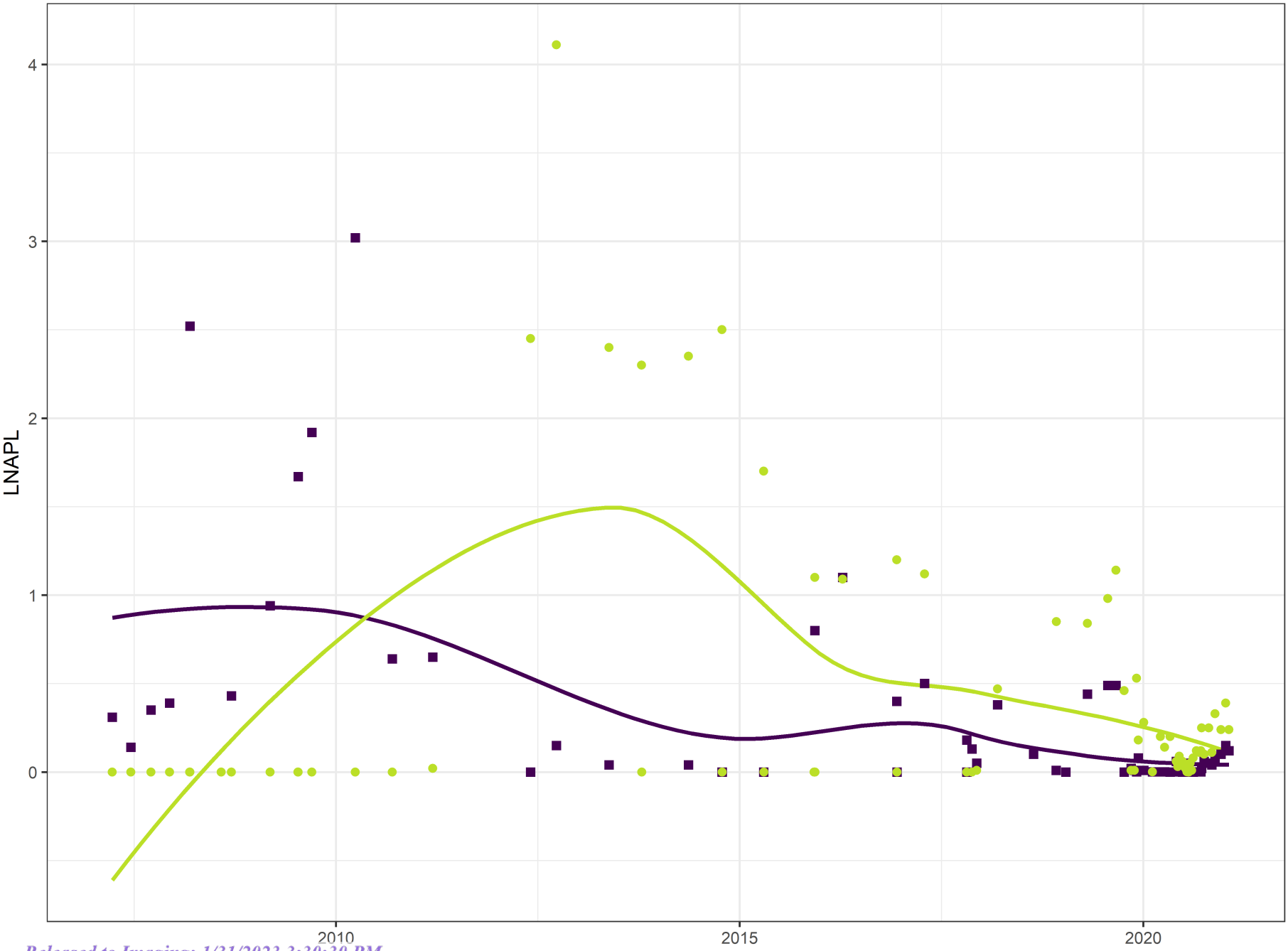
Notes :
10 gals SPH from MW-02-15, 15 gallons from MW-14

Onsite: 7:00

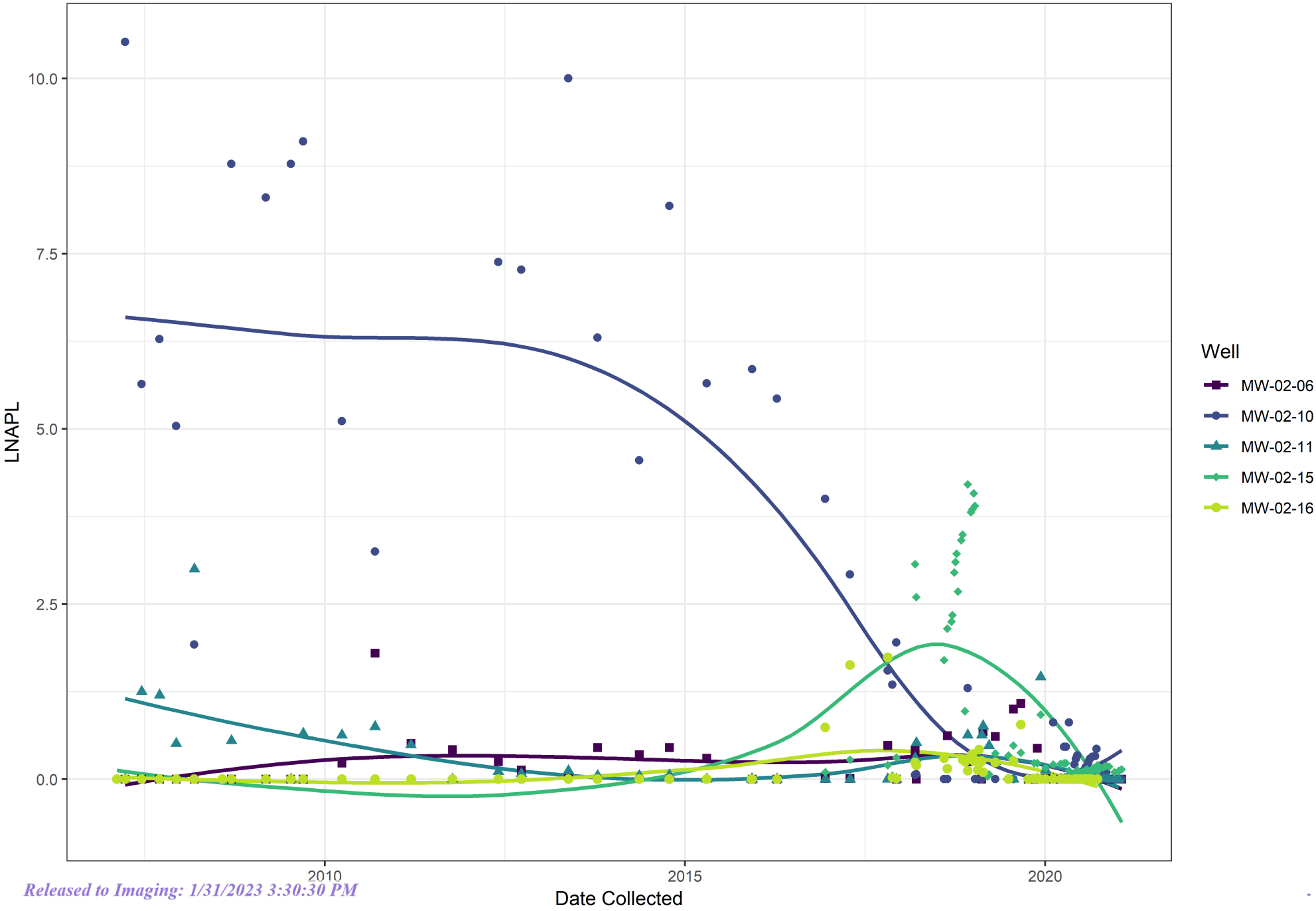
Appendix E

LNAPL Recovery Charts

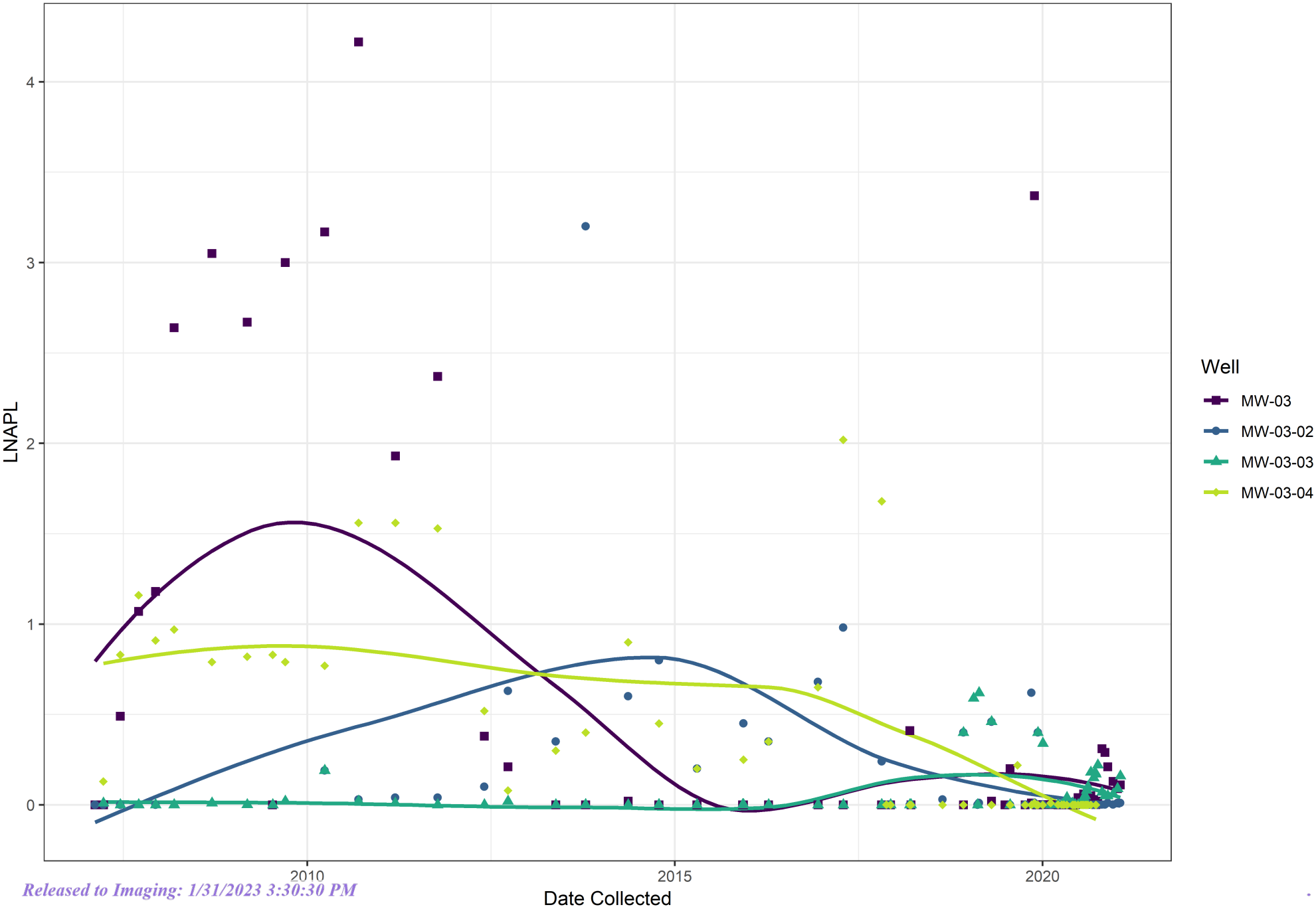
LNAPL Plot A



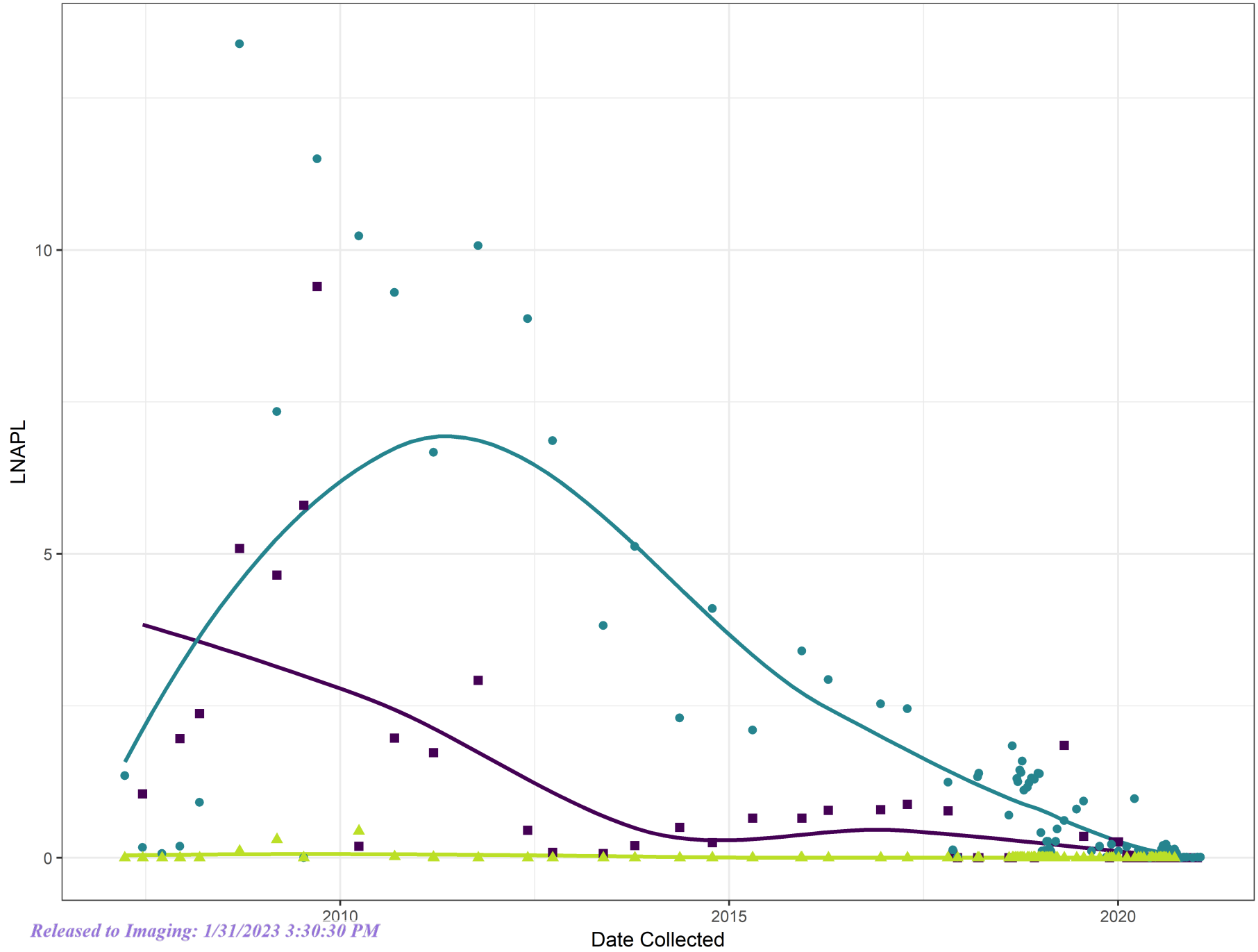
LNAPL Plot B


LNAPL
10.0
7.5
5.0
2.5
0.0
2010
2015
2020
Date Collected
Well
MW-02-06
MW-02-10
MW-02-11
MW-02-15
MW-02-16

LNAPL Plot C


LNAPL
4
3
2
1
0
2010
2015
2020
Date Collected
Well
MW-03
MW-03-02
MW-03-03
MW-03-04

LNAPL Plot D


LNAPL
10
5
0
2010
2015
2020
Date Collected
Well
MW-04
MW-06
MW-07

LNAPL Plot E

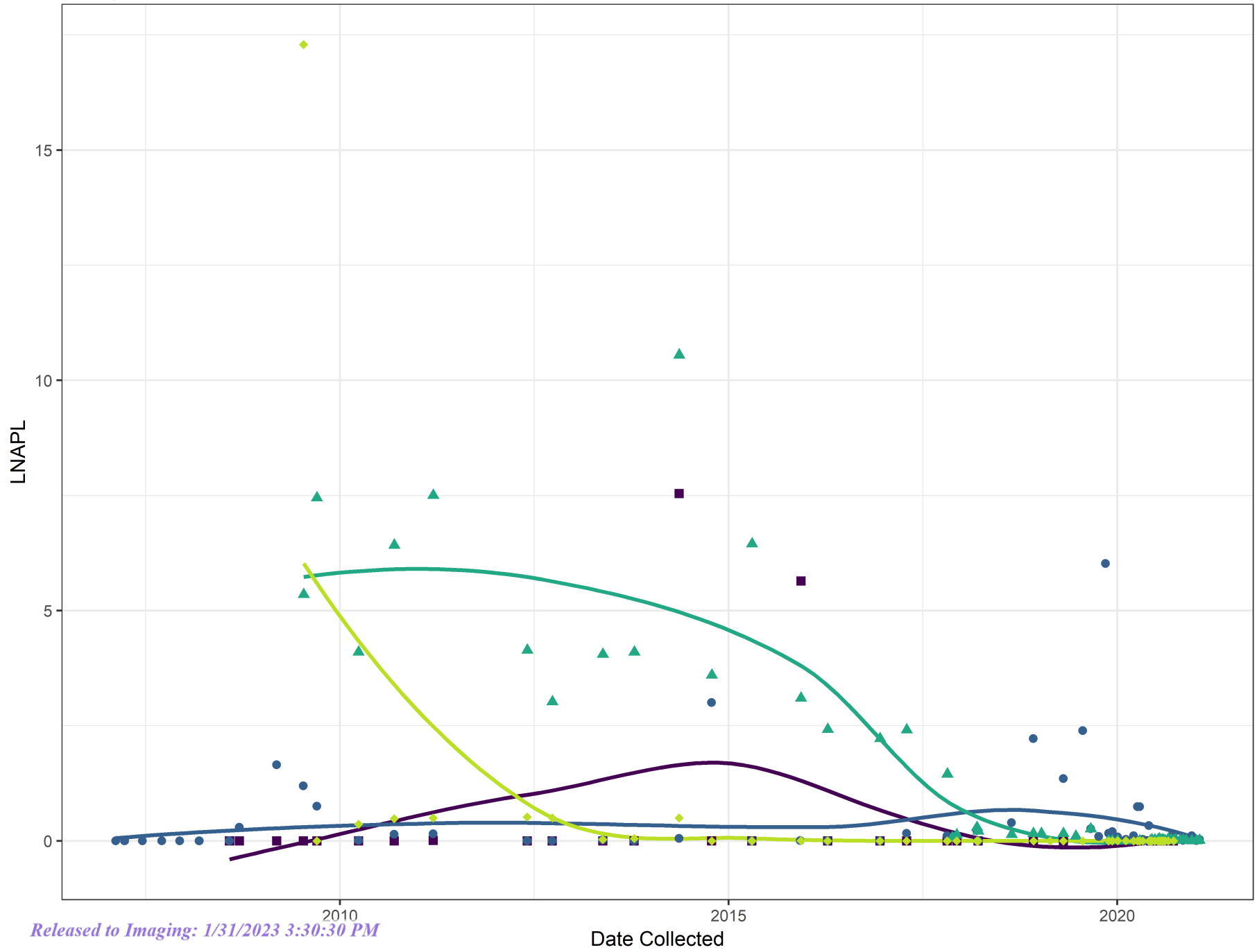

LNAPL
15
10
5
0
2010
2015
2020
Date Collected
Well
MW-13
MW-14
MW-19
MW-20

Chart B

Staging Area A

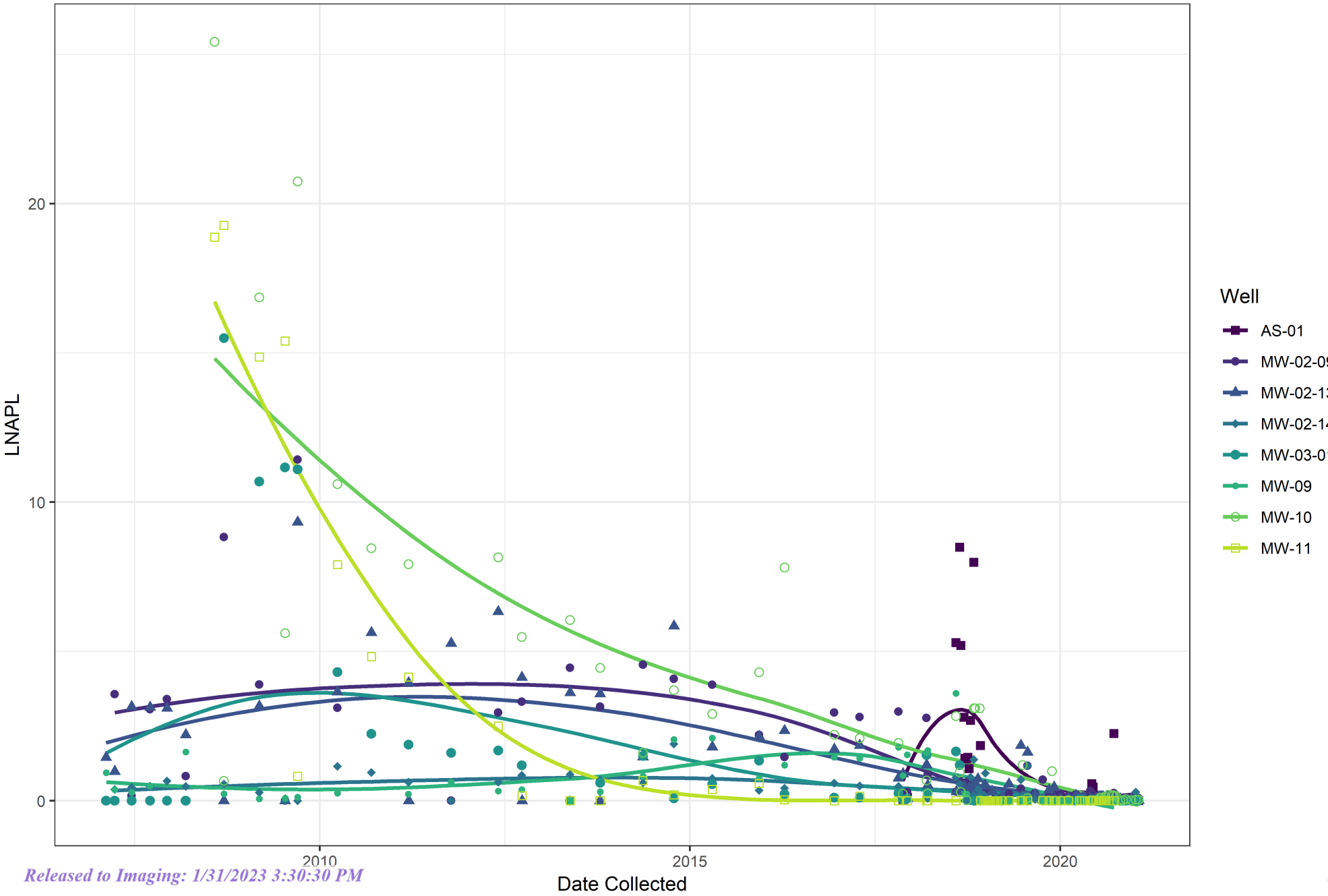
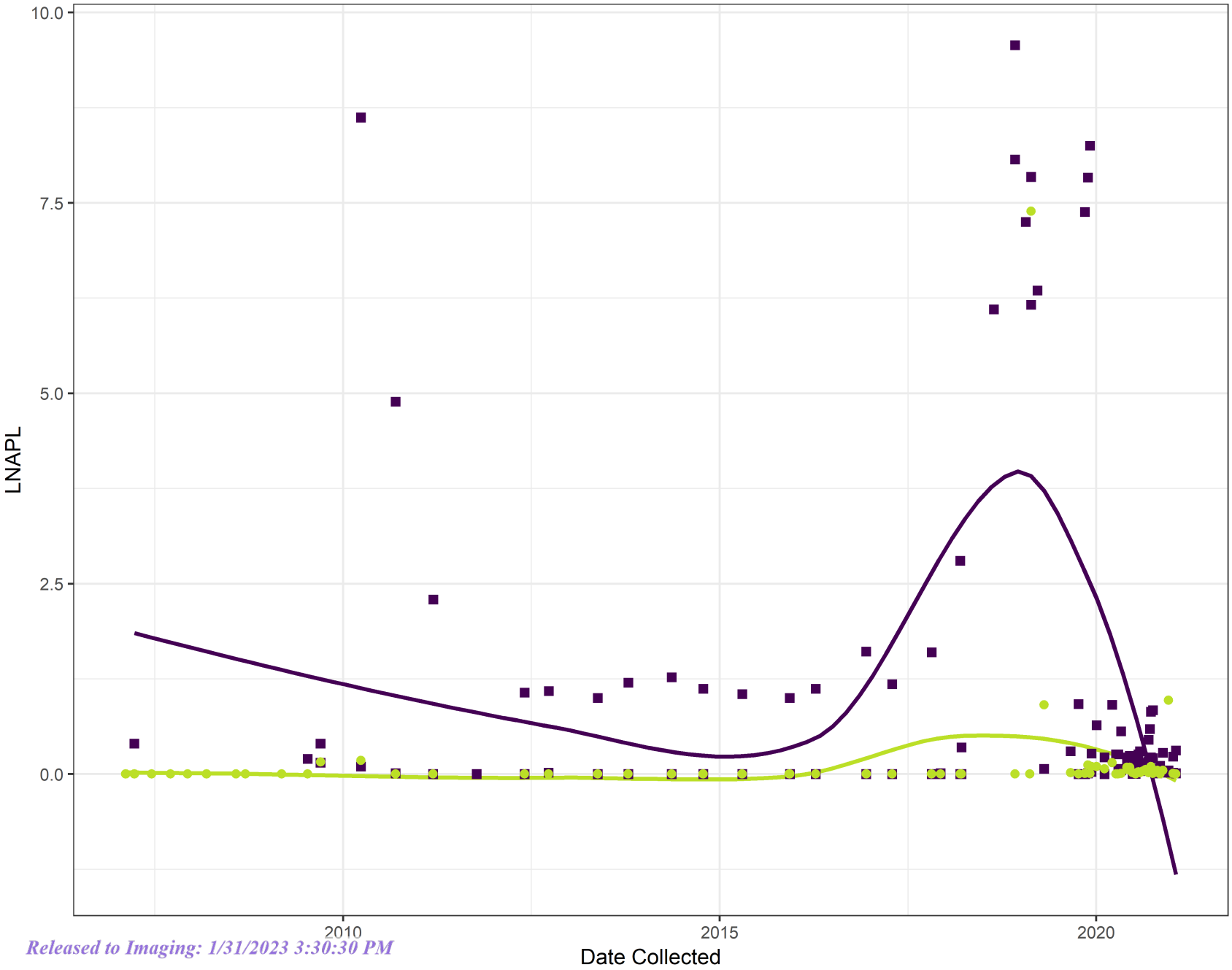
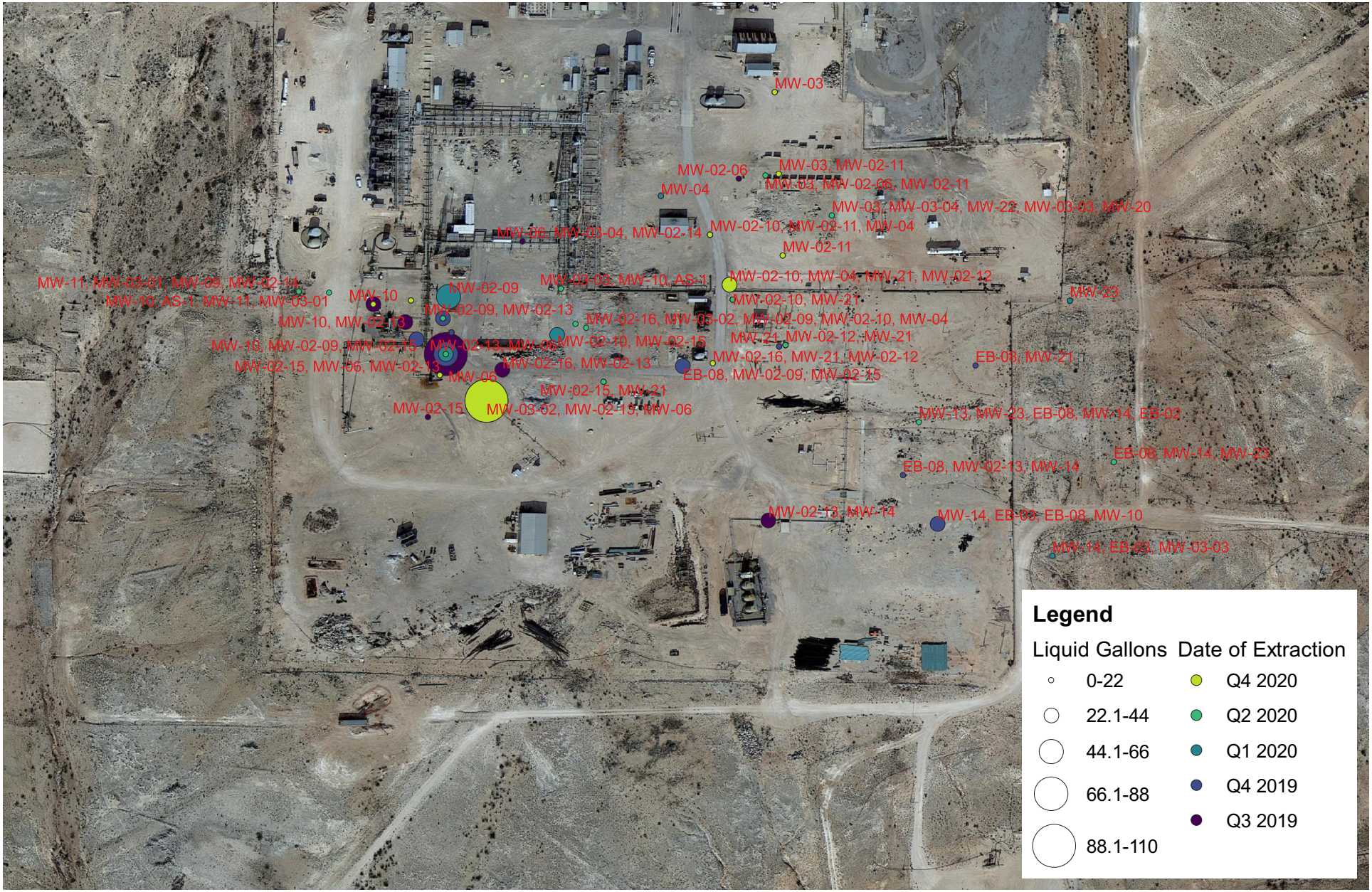


Chart C

Staging Area B



Extraction Over Time, Liquid Gallons



Note: Extractions from multiple wells are depicted at the center point between these wells (the midpoint between MW-03 and MW-02-11, for example).

District I
1625 N. French Dr., Hobbs, NM 88240
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District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
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Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 99690

CONDITIONS

Operator:	OGRID:
Aka Energy Group, LLC 125 Mercado St, Suite 201 Durango, CO 80301	330743
	Action Number: 99690
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
nvelez	Accepted for the record. See app ID 145697 for most updated status.	1/31/2023