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FAIRBANKS ENVIRONMENTAL SERVICES

DATE: September 8, 2016

TO: Mr. Russell Grandel, Alaska Railroad Corporation

FROM: Mr. Mike Boese, Fairbanks Environmental Services

RE: 2016 Groundwater Monitoring Report, Rev1
Former Mammoth Trucking Site
Anchorage, Alaska
ADEC Hazard ID – 23887 / File ID – 2100.26.202

## EXECUTIVE SUMMARY

On June 22, 2016, Fairbanks Environmental Services (FES) collected groundwater samples from six existing wells (CHMWE1, CHMWE2, EMCONMW-4, CHMWE5, MW-6, and MW-7) associated with the former Mammoth Trucking site to update site conditions. The former Mammoth Trucking site is located at 1048 East Whitney Road in Anchorage, Alaska (Figure 1).

Groundwater samples were analyzed for volatile organic compounds (VOC), gasoline range organics (GRO), diesel range organics (DRO), and residual range organics (RRO). Laboratory results exceeded Alaska Department of Environmental Conservation (ADEC) Table C groundwater cleanup levels in five of the six wells that were sampled. Compounds that were detected above ADEC groundwater cleanup levels included tetrachloroethene (PCE) in CHMWE1; DRO, RRO, trichloroethene (TCE), and vinyl chloride in CHMWE2; RRO in EMCONMW-4, and vinyl chloride in CHMWE5 and MW-6. No compounds were detected above cleanup levels in groundwater samples from well MW-7. Groundwater elevation data infer a southerly groundwater flow with a gradient of 0.02 feet per foot.

DRO and/or RRO contamination detected in groundwater samples from wells CHMWE2 and CHMWE4 is likely from residual petroleum hydrocarbons associated with the former underground storage tanks (USTs). Low levels of petroleum-related compounds (benzene, toluene, xylenes, and etc.) were noted (below their respective cleanup levels) in groundwater samples from all wells except CHMWE1; CHMWE1 which is located upgradient of the former USTs.

The distribution of PCE and its breakdown products in site monitoring wells with respect to groundwater flow direction is consistent with the reductive dechlorination process in which PCE degrades (sequentially losing one chlorine atom at a time) to vinyl chloride. The highest PCE concentrations were detected from the furthest upgradient well (CHMWE1); PCE and its daughter products (TCE, cis-1,2-dichloroethene, and vinyl chloride) were detected in samples from CHMWE2 located downgradient of CHMEW1 within the former UST area; and vinyl chloride (but no PCE or TCE) was detected in samples from all three

downgradient wells located on the southern edge of the property (CHMWE5, MW-6, and MW-7). The source of PCE is unknown.

# 1.0 INTRODUCTION

## 1.1 Site Description

The former Mammoth Trucking site is located at 1048 East Whitney Road in Anchorage, Alaska (Figures 1 and 2). The subject property is currently leased to Alaska West Express by the ARRC. Site improvements include a building surrounded by a large, paved yard. The site is underlain by a shallow, unconfined aquifer.

## 1.2 Previous Investigations

In 1990, one 500-gallon gasoline UST, one 2,000-gallon diesel UST, one 12,000-gallon diesel UST, and two used oil USTs were removed from the northwest corner of the former Mammoth Trucking property. After removal of the tanks and approximately 140 cubic yards of contaminated soil, obvious soil contamination remained (Northern Test Lab, 1991).

In 1994, Laidlaw Transit, Inc. (Laidlaw), assumed the lease for the property. As part of the lease agreement, Laidlaw contracted with EMCON Alaska, Inc. (EMCON) to perform a baseline site assessment, including the installation of four monitoring wells. Groundwater analysis results revealed DRO, GRO, and VOCs (including vinyl chloride and PCE) above the ADEC groundwater cleanup levels (EMCON, 1994).

Site characterization activities conducted between 1994 and 2012 indicated that soil and groundwater exceed ADEC cleanup levels for petroleum and chlorinated solvents. The source of chlorinated solvent contamination has not been identified, and based on PCE detections in wells located upgradient of the tanks, the chlorinated solvent contamination does not appear to be from the former USTs. Groundwater flow direction at the former Mammoth Trucking site is generally to the south-southwest toward Ship Creek (CH2MHill, 1999b).

In 2013, a passive soil gas survey was performed on the west and northwest sides of the existing building. While some of the petroleum and chlorinated contaminants detected by the soil gas survey have been detected in soil and groundwater at the site, there was not a strong correlation in the detection locations (FES, 2013). The results did indicate a hot spot located 50 feet west of the building near the location of the former USTs.

A follow-up soil gas survey was performed in 2014 and included the installation and sampling of three soil gas wells. While the survey confirmed that deep soil gas from the hot spot exceeded ADEC target levels, the soil gas samples from the two well points installed nearest the existing building were below target levels for deep soil gas (FES, 2015b).

Groundwater samples were collected from six wells (4 existing and 2 new wells [MW-6 and MW-7]) in October 2015 and analyzed for VOC, GRO, DRO, and RRO. Laboratory results exceeded ADEC Table C groundwater cleanup levels in four of the six wells that were sampled. As shown on Figure 4, compounds that were detected above ADEC groundwater cleanup levels included PCE in CHMWE1; DRO, TCE, and vinyl chloride in CHMWE2; and vinyl chloride in CHMWE5 and MW-6. No compounds were detected above ADEC cleanup levels in EMCONMW-4 or MW-7 (FES, 2015a).

# 2.0 WORK PERFORMED

Field work was performed in accordance with the approved work plan (FES, 2016) with the deviations described in Section 2.4. ADEC-qualified environmental professional Mike Boese provided environmental sampling services.

## 2.1 Well Condition

All wells were in good condition, except well CHMWE2 went dry during the initial purging even though the lowest pump rate was utilized. In 2015, well CHMWE2 was successfully purged with no drawdown using a peristaltic pump. The lowest submersible pump rate was higher than the peristaltic pump rate.

The water level in well CHMWE2 was allowed to recover to 80% and samples were collected using a no purge method. As a result, no groundwater parameters were collected and the water was slightly turbid.

## 2.2 Water Level Measurements and Flow Direction

Immediately prior to purging and sampling, the depth to water was measured in each of the wells. The depths were measured to within 0.01-foot from the top of the well casings using a water level probe. Groundwater depths are presented on Table 1.

Groundwater depths varied between approximately 6 to 10 feet bgs during the June 22, 2016 monitoring event. The June 2016 water levels were approximately 1 foot lower than in October 2015. The groundwater measurements were used to calculate relative groundwater elevations. Groundwater elevation contours for June 22, 2016 are displayed on Figure 3; inferred groundwater flow is to the south with a gradient of approximately 0.02 feet per foot. The groundwater flow direction from 2016 is similar to the flow direction from 2015, but is less westerly than noted in 1999 (CH2M Hill, 199b).

## 2.3 Groundwater Sample Collection

Six existing monitoring wells (CHMWE1, CHMWE2, EMCONMW-4, CHMWE5, MW-6, and MW-7) shown on Figure 2 were sampled on June 22, 2016 using low-flow techniques. The wells were purged and sampled using disposable tubing and a stainless steel submersible pump. The pump was set at approximately 1 foot below the top of the water column, and due to the size of the pump (1-foot-long), the water level could not be measured during well purging. However, based on continuous water flow during sampling efforts, drawdown was less than 1 foot for all wells except CHMWE2 (see Section 2.1).

Groundwater parameters were collected with a YSI Model 556 multi-parameter instrument equipped with a flow through cell. Analytical samples were collected after the temperature, pH, dissolved oxygen (DO), oxidation-reduction (redox) potential, and conductivity parameters had stabilized per the requirements in ADEC's field sampling guidance (ADEC, 2016) with the exception of low yield well CHMWE2 (see Sections 2.1 and 2.4). Groundwater parameters are summarized in Table 1. Groundwater samples were collected by disconnecting the flow through cell and pumping directly into sample containers at the minimum flow rate (0.25 gallons per minute) to minimize sample aeration.

Groundwater samples were collected from each well, and a field duplicate sample (denoted MWX) was collected from well CHMWE1. Water samples were placed in a cooler containing frozen gel ice and submitted to SGS in Anchorage, Alaska. Groundwater samples were analyzed for VOC, GRO, DRO, and RRO by methods SW8260B, AK101, AK102, and AK103, respectively, and a water trip blank accompanied

project groundwater samples to the laboratory and was analyzed for VOC and GRO. An equipment rinsate was collected from the decontaminated submersible pump after sampling well CHMWE1 and was analyzed for VOC, GRO, DRO, and RRO. Groundwater samples are summarized in Table 2.

### 2.4 Work Plan Deviations

Work was performed according to the approved Work Plan (FES, 2016). The only work plan deviation was that well CHMWE2 was sampled without stabilizing groundwater parameters as the well went dry using the lowest pump setting. A groundwater sample was collected after water level recovered (approximately 15 minutes) to approximately 80% of the original measurement. The groundwater sample from CHMWE2 was noted to be more turbid than other wells.

## 3.0 GROUNDWATER RESULTS

Field groundwater parameters, including groundwater depths, are summarized in Table 1. Groundwater samples submitted to the laboratory for analysis are summarized in Table 2. Groundwater sample results are shown in Table 3 and summarized on Figure 4. Historical groundwater results are also shown on Figure 4 for comparison.

No sheen was observed during purging or sampling any of the six monitoring wells sampled during the monitoring event. However, a petroleum odor was noted on the purge water removed from well CHMWE2. A reduced groundwater environment (DO below 2 milligrams per liter [mg/L]) was noted in all wells located downgradient of CHMWE1.

Groundwater sample results were compared to cleanup levels listed in Table C of 18 AAC 75 (ADEC, 2016). Concentrations of DRO, RRO, PCE, TCE, and vinyl chloride above ADEC groundwater cleanup levels were detected in the samples collected during 2016.

- DRO exceeded the ADEC groundwater cleanup level of 1.5 mg/L in the sample from well CHMWE2. DRO was detected in CHMWE2 at 7.18 mg/L which was significantly higher than the DRO concentration measured in the sample from this well during 2015 (2.45 mg/L), but below the historical high concentration of 26.6 mg/L in 1999.
- RRO exceeded the ADEC groundwater cleanup level of 1.1 mg/L in samples from well CHMWE2 and EMCONMW-4. RRO was detected in these wells at concentrations of 4.49 mg/L and 1.11 mg/L respectively. RRO was not detected above the cleanup level in 2015.
- PCE exceeded the groundwater cleanup level in the sample from well CHMWE1. The groundwater sample from CHMWE1 exhibited a PCE concentration of 0.0496 mg/L, which was above the groundwater cleanup level of 0.005 mg/L and slightly less than the historical high PCE concentration of 0.0521 detected in this well during October 2015.
- TCE exceeded the groundwater cleanup level of 0.005 mg/L in the sample from well CHMWE2. TCE was detected in sample CHMWE2 at a concentration of 0.00917 mg/L, which was higher than the TCE concentration detected in October 2015 but consistent with TCE concentrations detected in 2010 and 2012.
- Vinyl chloride concentrations exceeded the groundwater cleanup level of 0.002 mg/L in samples from three wells during 2016; vinyl chloride concentrations in CHMWE2, CHMWE5, and MW-6

were 0.00231, 0.0224, and 0.0177 mg/L, respectively. Vinyl chloride concentrations in samples from MW-7 (0.00167 mg/L) were just below the cleanup level.

The DRO and RRO exceedances in sample CHMWE2 are likely associated with residual petroleum contamination documented during the 1990 UST removal since CHMWE2 was installed in the former UST excavation footprint. Elevated DRO and RRO concentrations were also noted in EMCONMW-4 located downgradient of the residual petroleum contamination.

PCE was only detected in samples (primary and field duplicate) from upgradient well CHMWE1. PCE breakdown products including TCE, dichloroethenes, and/or vinyl chloride were detected in all wells except EMCONMW-4. Since no chlorinated compounds were detected in EMCONMW-4, this well may represent the western extent of the downgradient chlorinated contaminant plume. Vinyl chloride was detected above the ADEC cleanup level in two of the three wells at the southern edge of the property.

## 4.0 INVESTIGATION DERIVED WASTE

Water from monitoring well development and well purging was disposed of through the National Response Corporation (NRC). Approximately 27 gallons of purge/decontamination water was delivered to the NRC facility at 2020 Viking Road following the completion of groundwater sampling on June 23, 2016. The waste manifest and certificate of disposal are included in Appendix C.

Sample gloves and tubing were placed in a dumpster and disposed of at the Anchorage Municipal Landfill.

## 5.0 DATA QUALITY SUMMARY

Groundwater samples were collected and analyzed in accordance with the approved Work Plan (FES, 2016).

All project samples were analyzed by SGS of Anchorage, Alaska. The laboratory is approved by the State of Alaska through the Contaminated Sites Program for the contaminant methods employed. All groundwater samples were shipped in a single SDG and assigned the SGS report number 1163342; a copy of the laboratory report is included in Appendix A and the ADEC checklist is included in Appendix B.

The chemical data were evaluated in order to assess whether they met data quality objectives and were acceptable for project use. The findings of the review are documented in ADEC Checklists. Overall, the review process deemed the soil and groundwater data acceptable for project use. No data were rejected pursuant to FES's data quality review, and all analytical data may be used for project purposes. Notable data quality issues are summarized below:

- The DO concentration measured in well MW-6 prior to sample collection was below the theoretical minimum at -0.09 mg/L. Based on this result, the dissolved oxygen probe may have been biased low during the 2016 monitoring event. The dissolved oxygen concentrations measured during 2016 were lower than those measured during 2015.
- Two groundwater analytes (1,2-dibromoethane and 1,2,3-trichloropropane) were reported with inadequate sensitivity. Although the analytes were not detected in project samples, the analytes were reported with limits of detection in excess of associated ADEC groundwater cleanup levels.

Therefore, the 1,2-dibromoethane and 1,2,3-trichloropropane results in groundwater samples have limited usefulness; the absence of these analytes at concentrations above cleanup levels cannot be verified. However, the aforementioned analytes do not appear to be site contaminants of potential concern.

- At 9.9 degrees Celsius (°C), the temperature blank was above the recommended cooler temperature range of 2 to 6°C even though the gel ice inside the cooler remained frozen. Since the samples were submitted on the same day and within hours of when they were collected, impact to data was minor and results may be used for their intended purpose. The 2016 groundwater results may have a low bias.
- Well CHMWE2 went dry after 0.5 gallons of water was pumped. The well went dry on the lowest submersible pump setting. The well was allowed to recover to 80% and was sampled without further purging. As a consequence, the sample collected from this well was more turbid than samples from other wells.

## 6.0 CONCLUSIONS

Contaminant concentrations exceeded ADEC Table C cleanup levels in groundwater samples collected from five of the six wells. These included PCE in CHMWE1; DRO, RRO, TCE, and vinyl chloride in CHMWE2; RRO in EMCONMW-4, and vinyl chloride in CHMWE5 and MW-6. No contaminants were detected above ADEC cleanup levels in MW-7; however, vinyl chloride was detected just below the cleanup level in this well. Groundwater elevation data infer a southerly groundwater flow with a gradient of 0.02 feet per foot.

The DRO and/or RRO contamination detected in groundwater samples from wells CHMWE2 and CHMWE4 is likely from residual petroleum hydrocarbons associated with the former USTs. Low levels of petroleum-related compounds (benzene, toluene, xylenes, and etc.) were noted (below their respective cleanup levels) in groundwater samples from all wells except CHMWE1; CHMWE1 which is located upgradient of the former USTs. Reduced groundwater conditions (dissolved oxygen <2 mg/L) noted in all wells except furthest upgradient well CHMWE1 is likely the result of anaerobic biodegradation of residual petroleum hydrocarbons

The range and distribution of PCE and its breakdown products detected in site monitoring wells in the direction of groundwater flow is consistent with the reductive dechlorination process in which PCE degrades to vinyl chloride. The reduced groundwater environment identified at the site allows for a much faster dechlorination rate. The PCE contamination noted in the northern part of the site is presumably converted to vinyl chloride via reductive dechlorination (sequentially losing one chlorine atom at a time) as it transported via groundwater advection to the southern part of the site.

Elevated PCE was detected in the furthest upgradient well (CHMWE1); PCE and its daughter products (TCE, cis-1,2-dichloroethene, and vinyl chloride) were detected in samples from CHMWE2 located with the former UST area; and vinyl chloride (but no PCE or TCE) was detected in samples from downgradient wells (CHMWE5, MW-6, and MW-7) located at the southern edge of the site. The reason for the absence of chlorinated compounds detected in samples from well EMCONMW-4 is unknown.

As shown in Figure 4, historical PCE concentrations have been fairly consistent in the furthest upgradient well (CHMWE1). The vinyl chloride concentrations in downgradient wells (particularly CHMWE5) have fluctuated by an order of magnitude. The reduced groundwater environment noted in downgradient wells may be inhibiting further dechlorination of vinyl chloride.

The 2016 DRO, RRO, PCE, TCE, and vinyl chloride concentrations were all lower than the maximum historic groundwater concentrations observed at this site. The source of the PCE contamination remains unknown, and the southern extent of vinyl chloride exceeding ADEC cleanup levels has not been determined.

## 7.0 REFERENCES

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**Attachments:**

Table 1 – Groundwater Parameters
Table 2 – Groundwater Sample Summary
Table 3 – Groundwater Sample Results

Figure 1 – Vicinity Map
Figure 2 – Site Map
Figure 3 – 2016 Groundwater Elevation Contours
Figure 4 – DRO, RRO, PCE, TCE, and Vinyl Chloride Concentrations in Groundwater Samples

Appendix A – Laboratory Report 1163342
Appendix B – Laboratory Checklist
Appendix C – Waste Manifest and Disposal Certificate

**Table 1 - Groundwater Parameters**
**Former Mammoth Trucking**

| Well | Date | Petroleum Sheen or Odor? | Depth to Groundwater (feet BTOC) | Temperature (Degrees Celsius) | Specific Conductivity (mS/cm) | Dissolved Oxygen (mg/L) | pH | Oxidation Reduction Potential (mV) |
|---|---|---|---|---|---|---|---|---|
| CHMWE1 | 6/22/2016 | None | 9.95 | 7.42 | 0.530 | 2.00 | 6.47 | 210.6 |
| CHMWE2 | 6/22/2016 | Petroleum Odor | 7.59 | No parameters recorded; well went dry using lowest pump setting. | | | | |
| EMCONMW-4 | 6/22/2016 | None | 6.18 | 8.92 | 0.607 | 0.41 | 5.92 | -94.2 |
| CHMWE5 | 6/22/2016 | None | 8.53 | 6.86 | 0.764 | 0.31 | 6.39 | 20.3 |
| MW-6 | 6/22/2016 | None | 7.56 | 5.50 | 1.126 | **-0.09** | 6.53 | -73.7 |
| MW-7 | 6/22/2016 | None | 9.10 | 6.37 | 0.593 | 0.17 | 6.92 | -82.7 |

**Bolded** result is below the theoretical limits for dissolved oxygen concentration.
BTOC - below top of casing
mg/L - milligrams per liter
mS/cm - milliSiemens per centimeter
mV - millivolts

**Table 2 - Groundwater Sample Summary**
**Former Mammoth Trucking**

| Sample Number | Location | Sample Type | Date | Time | Sampler | VOC (8260B) | GRO (AK101) | DRO (AK102) | RRO (AK103) | Laboratory Report |
|---|---|---|---|---|---|---|---|---|---|---|
| **Groundwater Samples** | | | | | | | | | | |
| CHMWE1 | CHMWE1 | Primary | 6/22/2016 | 930 | MB | x | x | x | x | 1163342 |
| CHMWE2 | CHMWE2 | Primary | 6/22/2016 | 1155 | MB | x | x | x | x | 1163342 |
| EMCONMW-4 | EMCONMW-4 | Primary | 6/22/2016 | 1255 | MB | x | x | x | x | 1163342 |
| CHMWE5 | CHMWE5 | Primary | 6/22/2016 | 1500 | MB | x | x | x | x | 1163342 |
| MW6 | MW-6 | Primary | 6/22/2016 | 1550 | MB | x | x | x | x | 1163342 |
| MW7 | MW-7 | Primary | 6/22/2016 | 1400 | MB | x | x | x | x | 1163342 |
| MWX | CHMWE1 | Field Duplicate | 6/22/2016 | "1200" | MB | x | x | x | x | 1163342 |
| **Quality Control Samples** | | | | | | | | | | |
| Rinsate | Water | Equipment Rinsate | 6/22/2016 | 1010 | MB | x | x | x | x | 1163342 |
| Trip Blank | Water | Trip Blank | 6/22/2016 | 800 | - | x | x | - | - | 1163342 |

X - Indicates that the sample was analyzed for the method listed at the top of the column.

**Table 3 - Groundwater Sample Results**
**Former Mammoth Trucking**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Location | ADEC Cleanup Level[1] | CHMWE1 | | CHMWE2 | EMCONMW-4 | CHMWE5 | MW-6 | MW-7 | Rinsate | Trip Blank |
| | | | Sample ID | | CHMWE1 | MWX | CHMWE2 | EMCONMW-4 | CHMWE5 | MW6 | MW7 | Rinsate | Trip Blank |
| | | | Laboratory ID | | 1163342001 | 1163342007 | 1163342002 | 1163342003 | 1163342004 | 1163342005 | 1163342006 | 1163342008 | 1163342009 |
| | | | Collection Date | | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 |
| | | | Sample Type | | Primary | Field Duplicate | Primary | Primary | Primary | Primary | Primary | Primary | Trip Blank |
| **Analyte** | **Method** | **Units** | | | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** |
| Gasoline Range Organics | AK101 | mg/L | *2.2* | | ND(0.0500) | ND(0.0500) | 0.0565 J | ND(0.0500) | ND(0.0500) | 0.0746 J | 0.0520 J | ND(0.0500) | ND(0.0500) |
| Diesel Range Organics | AK102 | mg/L | *1.5* | | ND(0.294) | ND(0.318) | **7.18** | 1.36 | 0.539 J | 0.823 | 0.369 J | ND(0.300) | - |
| Residual Range Organics | AK103 | mg/L | *1.1* | | ND(0.245) | 0.182 J | **4.99** | **1.11** | 0.644 | 0.491 J | 0.285 J | ND(0.250) | - |
| | | | | | | | | | | | | | |
| Benzene | SW8260B | mg/L | *0.005* | | ND(0.0002) | ND(0.0002) | 0.00064 | 0.00026 J | 0.00178 | 0.00393 | 0.0006 | ND(0.0002) | ND (0.0002) |
| Toluene | SW8260B | mg/L | *1* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | 0.00090 J | 0.00409 | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Ethylbenzene | SW8260B | mg/L | *0.7* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| n-Butylbenzene | SW8260B | mg/L | *0.37* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Carbon disulfide | SW8260B | mg/L | *3.7* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| 1,4-Dichlorobenzene | SW8260B | mg/L | *0.075* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,2-Dichloroethane | SW8260B | mg/L | *0.005* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,3,5-Trimethylbenzene | SW8260B | mg/L | *1.85* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | 0.00038 J | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 4-Chlorotoluene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Chlorobenzene | SW8260B | mg/L | *0.1* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 4-Methyl-2-pentanone (MIBK) | SW8260B | mg/L | *2.9* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| cis-1,2-Dichloroethene | SW8260B | mg/L | *0.07* | | ND(0.0005) | ND(0.0005) | 0.00573 | ND(0.0005) | 0.00073 J | 0.00109 | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 4-Isopropyltoluene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | 0.00045 J | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| cis-1,3-Dichloropropene | SW8260B | mg/L | *0.0085* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| n-Propylbenzene | SW8260B | mg/L | *0.37* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Styrene | SW8260B | mg/L | *0.1* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Dibromomethane | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| trans-1,3-Dichloropropene | SW8260B | mg/L | *0.0085* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,2,4-Trichlorobenzene | SW8260B | mg/L | *0.07* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1,2,2-Tetrachloroethane | SW8260B | mg/L | *0.0043* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,2-Dibromo-3-chloropropane | SW8260B | mg/L | *NE* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Methyl-t-butyl ether | SW8260B | mg/L | *0.47* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Tetrachloroethene | SW8260B | mg/L | *0.005* | | **0.0496** | **0.0483** | 0.00036 J | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Dibromochloromethane | SW8260B | mg/L | *0.01* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,3-Dichloropropane | SW8260B | mg/L | *NE* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,2-Dibromoethane | SW8260B | mg/L | *0.00005* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Carbon tetrachloride | SW8260B | mg/L | *0.005* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1,1,2-Tetrachloroethane | SW8260B | mg/L | *0.0043* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| Chloroform | SW8260B | mg/L | *0.14* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Vinyl acetate | SW8260B | mg/L | *0.037* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Bromobenzene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,2,3-Trichloropropane | SW8260B | mg/L | *0.00012* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Chloromethane | SW8260B | mg/L | *0.066* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Bromomethane | SW8260B | mg/L | *0.051* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Bromochloromethane | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Vinyl chloride | SW8260B | mg/L | *0.002* | | ND(0.0005) | ND(0.0005) | **0.00231** | ND(0.0005) | **0.0224** | **0.0177** | 0.00167 | ND(0.0005) | ND(0.0005) |
| Dichlorodifluoromethane | SW8260B | mg/L | *7.3* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Chloroethane | SW8260B | mg/L | *0.29* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| sec-Butylbenzene | SW8260B | mg/L | *0.37* | | ND(0.0005) | ND(0.0005) | 0.00042 J | ND(0.0005) | ND(0.0005) | 0.00044 J | ND(0.0005) | ND(0.0005) | ND(0.0005) |

**Table 3 - Groundwater Sample Results**
**Former Mammoth Trucking**

| | | | Location | ADEC Cleanup Level[1] | CHMWE1 | | CHMWE2 | EMCONMW-4 | CHMWE5 | MW-6 | MW-7 | Rinsate | Trip Blank |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Sample ID | | CHMWE1 | MWX | CHMWE2 | EMCONMW-4 | CHMWE5 | MW6 | MW7 | Rinsate | Trip Blank |
| | | | Laboratory ID | | 1163342001 | 1163342007 | 1163342002 | 1163342003 | 1163342004 | 1163342005 | 1163342006 | 1163342008 | 1163342009 |
| | | | Collection Date | | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 | 6/22/2016 |
| | | | Sample Type | | Primary | Field Duplicate | Primary | Primary | Primary | Primary | Primary | Primary | Trip Blank |
| **Analyte** | **Method** | **Units** | | | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** | **Result(LOD)** |
| Bromodichloromethane | SW8260B | mg/L | *NE* | | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) | ND(0.00025) |
| 1,1-Dichloroethene | SW8260B | mg/L | *0.007* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 2-Butanone (MEK) | SW8260B | mg/L | *0.022* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Methylene chloride | SW8260B | mg/L | *0.005* | | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) | ND(0.0025) |
| Trichlorofluoromethane | SW8260B | mg/L | *11* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| P & M -Xylene | SW8260B | mg/L | *10* | | ND(0.001) | ND(0.001) | ND(0.001) | 0.00062 J | 0.00075 J | 0.00077 J | ND(0.001) | ND(0.001) | ND(0.001) |
| Naphthalene | SW8260B | mg/L | *0.73* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| o-Xylene | SW8260B | mg/L | *10* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | 0.00032 J | 0.00041 J | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Bromoform | SW8260B | mg/L | *0.11* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Freon-113 | SW8260B | mg/L | *1.1* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| Xylenes (total) | SW8260B | mg/L | *10* | | ND(0.0015) | ND(0.0015) | ND(0.0015) | ND(0.0015) | 0.00116 J | ND(0.0015) | ND(0.0015) | ND(0.0015) | ND(0.0015) |
| 1,2,4-Trimethylbenzene | SW8260B | mg/L | *1.85* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | 0.00189 | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| tert-Butylbenzene | SW8260B | mg/L | *0.37* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1,1-Trichloroethane | SW8260B | mg/L | *0.2* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1-Dichloroethane | SW8260B | mg/L | *7.3* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 2-Chlorotoluene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Trichloroethene | SW8260B | mg/L | *0.005* | | 0.00135 | 0.00131 | **0.00917** | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| trans-1,2-Dichloroethene | SW8260B | mg/L | *0.1* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,2-Dichlorobenzene | SW8260B | mg/L | *0.6* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 2,2-Dichloropropane | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Hexachlorobutadiene | SW8260B | mg/L | *0.0073* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| Isopropylbenzene (Cumene) | SW8260B | mg/L | *3.7* | | ND(0.0005) | ND(0.0005) | 0.00056 J | ND(0.0005) | ND(0.0005) | 0.00073 J | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 2-Hexanone | SW8260B | mg/L | *NE* | | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) | ND(0.005) |
| 1,2-Dichloropropane | SW8260B | mg/L | *0.005* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1-Dichloropropene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,1,2-Trichloroethane | SW8260B | mg/L | *0.005* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,3-Dichlorobenzene | SW8260B | mg/L | *3.3* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |
| 1,2,3-Trichlorobenzene | SW8260B | mg/L | *NE* | | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) | ND(0.0005) |

[1] - ADEC Groundwater cleanup level from Table C of 18 AAC 75.345.

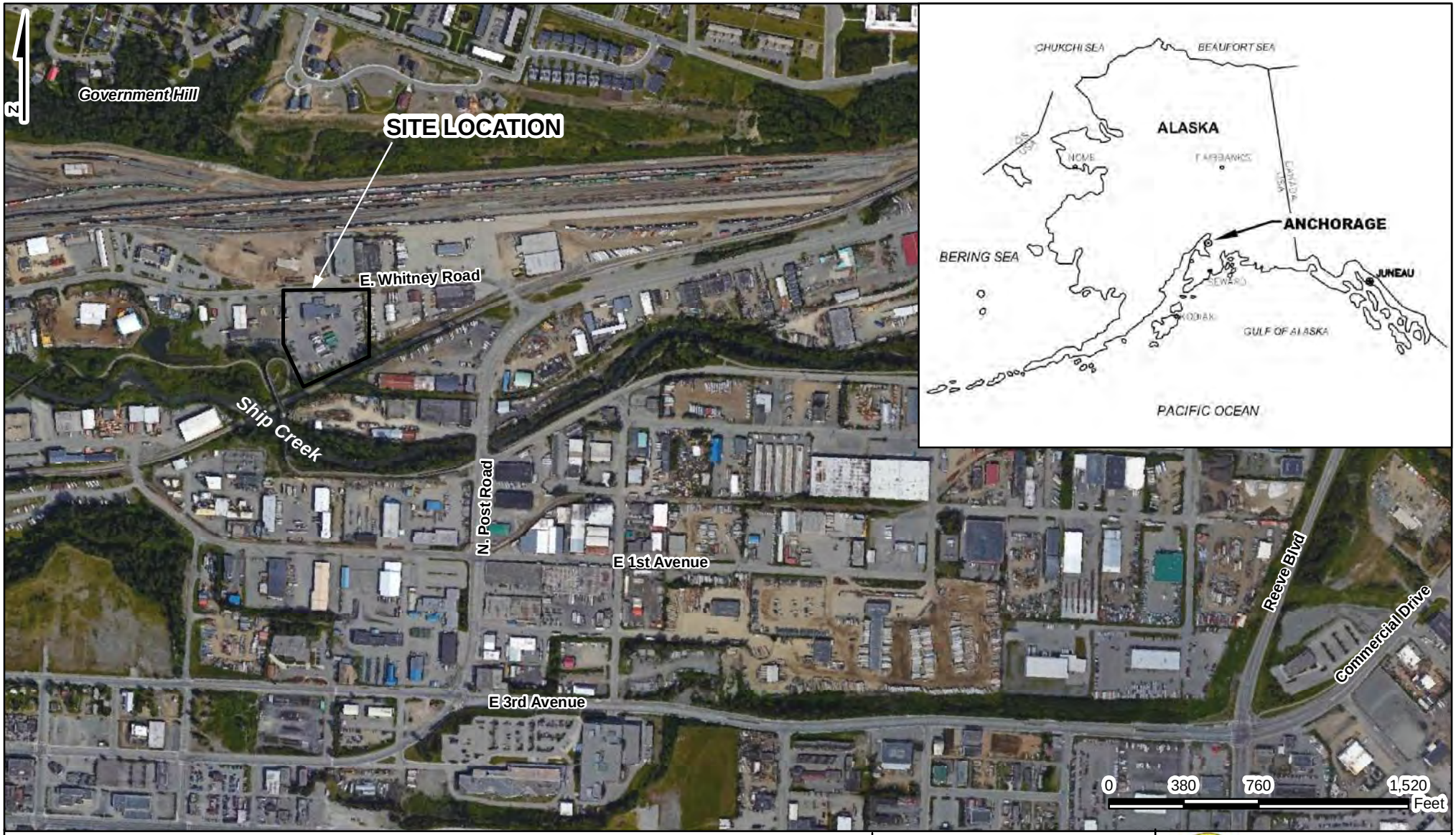
The temperature of the cooler blank was elevated (9.9 °C) upon submittal of samples to the laboratory; the impact to the chemical data was likely minor as the samples were submitted within hours of collection.

Results in yellow highlight indicate that they are greater than the cleanup level.

Gray highlighted results indicate that the LOD was greater than the cleanup level.

LOD - limit of detection
mg/L - milligrams per liter
NE - not established

Data Qualifiers:
J - Result is considered an estimate because it is less than the limit of quantitation.




NOTES:

Source: Aerial Imagery was georeferenced from Google Earth, 2015.

The Former Mammoth Trucking Site is located at 1048 E. Whitney Road in Anchorage, Alaska.

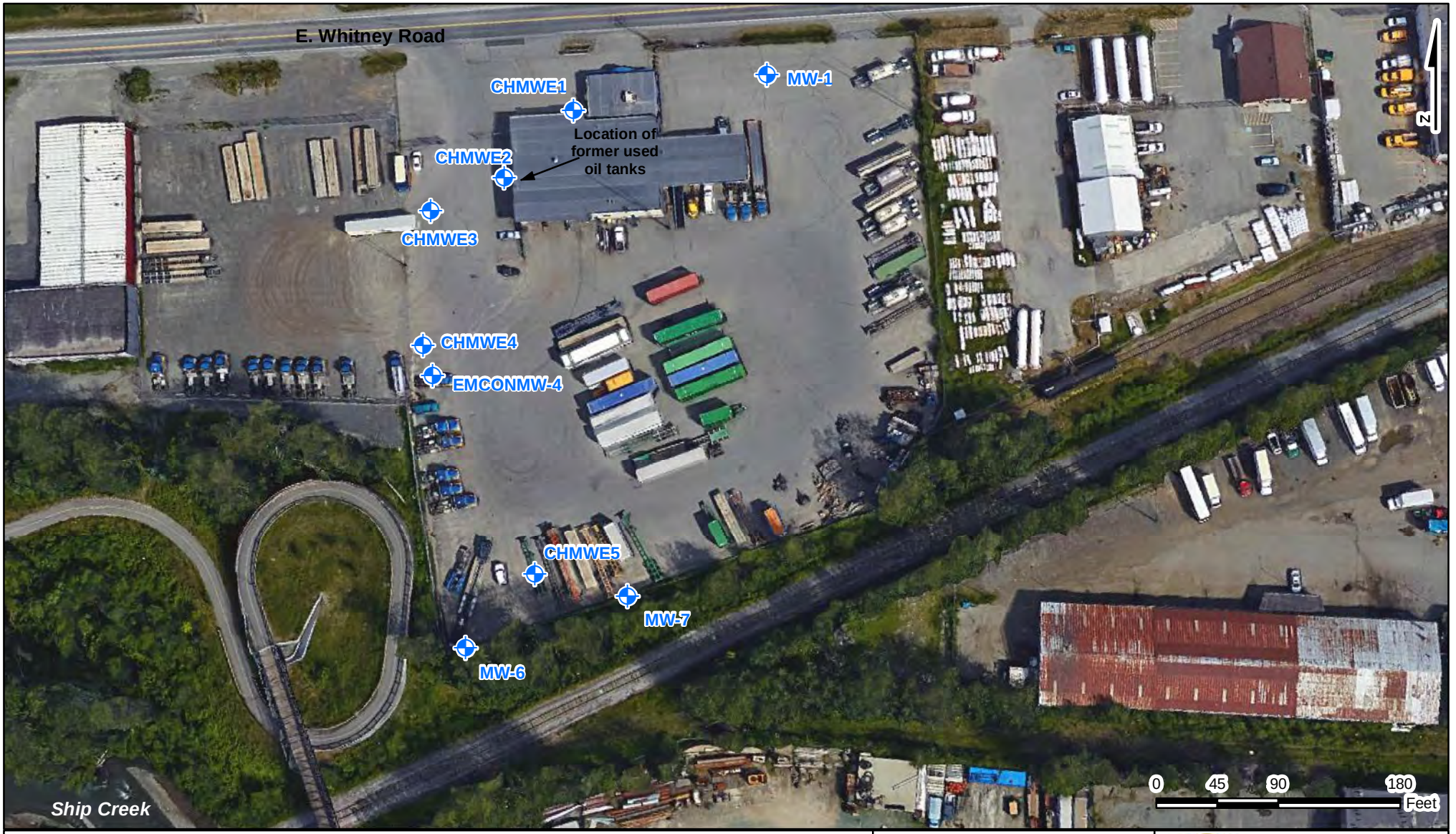
Fairbanks Environmental Services
3538 International Street
Fairbanks, Alaska 99701

ALASKA RAILROAD CORPORATION

# Vicinity Map

2016 Report
Former Mammoth Trucking Site
Anchorage, Alaska

| CONTRACT: | FIGURE: | DATE: |
|---|---|---|
| 85304 | 1 | 8/16 |




Monitoring Well

The Former Mammoth Trucking Site is located at 1048 E. Whitney Road in Anchorage, Alaska.

Fairbanks Environmental Services
3538 International Street
Fairbanks, Alaska 99701

ALASKA RAILROAD CORPORATION

**Site Map and Well Locations**
2016 Report
Former Mammoth Trucking Site
Anchorage, Alaska

| CONTRACT: | FIGURE: | DATE: |
|---|---|---|
| 85304 | 2 | 8/16 |


- Monitoring Well used in Contours
- Monitoring Well not used in Contours
- Groundwater Elevation Contour (0.5-foot)

The Former Mammoth Trucking Site is located at 1048 E. Whitney Road in Anchorage, Alaska.

Contours were generated in Surfer v.10 using water level measurements from June 22, 2016. Top of casing elevation for EMCONMW-4 was assumed to be 100.00 feet for the purposes of the local control survey.

Fairbanks Environmental Services
3538 International Street
Fairbanks, Alaska 99701

ALASKA RAILROAD CORPORATION

**2016 Groundwater Elevation Contours**

2016 Report
Former Mammoth Trucking Site
Anchorage, Alaska

| CONTRACT: | FIGURE: | DATE: |
|---|---|---|
| 85304 | 3 | 8/16 |


| CHMWE2 | 12/1998 | 8/1999 | 10/2010 | 9/2012 | 10/2015 | 6/2016 |
|---|---|---|---|---|---|---|
| DRO | **4.87** | **26.6** | **5.72** | **4.5** | **2.45** | **7.18** |
| RRO | ND | **11.9** | **2.39** | **1.24** | 0.832 | **4.49** |
| PCE | - | ND | ND | 0.00062 | ND | ND |
| TCE | - | 0.0016 | **0.00949** | **0.00963** | **0.00579** | **0.00917** |
| Vinyl Chloride | - | 0.001 | **0.00395** | **0.00677** | **0.00467** | **0.00231** |

| MW-1 | 10/2010 | 9/2012 |
|---|---|---|
| DRO | ND | ND |
| RRO | ND | 0.161 J |
| PCE | 0.00162 | 0.00179 |
| TCE | ND | ND |
| Vinyl Chloride | ND | ND |

| CHMW3 | 12/1998 | 8/1999 | 2/2003 |
|---|---|---|---|
| DRO | **36.6** | **93.2** | **2.3** |
| RRO | **1.9** | **5.4** | 0.42 |
| PCE | - | ND | - |
| TCE | - | 0.0009 | 0.0013 |
| Vinyl Chloride | - | **0.016** | **0.0064** |

| CHMWE1 | 12/1998 | 8/1999 | 10/2010 | 9/2012 | 10/2015 | 6/2016 |
|---|---|---|---|---|---|---|
| DRO | 0.2 | 0.25 | ND | ND | 0.332 J | ND |
| RRO | **2.0** | 1.1 | ND | 0.166 J | 0.218 J | ND |
| PCE | - | **0.044** | **0.0307** | **0.0405** | **0.0521** | **0.0496** |
| TCE | - | 0.0024 | 0.00141 | 0.00122 | 0.00142 | 0.00135 |
| Vinyl Chloride | - | ND | ND | ND | ND | ND |

| CHMWE3 | 12/1998 | 8/1999 |
|---|---|---|
| DRO | 0.49 | 1.28 |
| RRO | ND | **3.5** |
| PCE | - | ND |
| TCE | - | **0.02** |
| Vinyl Chloride | - | 0.0011 |

| EMCONMW-4 | 10/2015 | 6/2016 |
|---|---|---|
| DRO | 0.276 J | 1.36 |
| RRO | ND | **1.11** |
| PCE | ND | ND |
| TCE | ND | ND |
| Vinyl Chloride | ND | ND |

| CHMWE5 | 12/1998 | 8/1999 | 10/2010 | 9/2012 | 10/2015 | 6/2016 |
|---|---|---|---|---|---|---|
| DRO | 1.49 | **3.08** | 0.588 | 1.11 | 0.521 J | 0.539 J |
| RRO | 1.0 | **6.6** | ND | 0.455 J | 0.333 J | 0.644 |
| PCE | - | ND | ND | ND | ND | ND |
| TCE | - | ND | ND | ND | ND | ND |
| Vinyl Chloride | - | **0.0064** | **0.0179** | **0.00258** | **0.00585** | **0.0224** |

| CHMWE4 | 8/1999 | 10/2010 | 9/2012 |
|---|---|---|---|
| DRO | 1.36 | ND | 0.918 |
| RRO | **2.0** | 0.484 | 0.532 |
| PCE | ND | ND | ND |
| TCE | ND | ND | ND |
| Vinyl Chloride | ND | **0.0119** | ND |

| MW-6 | 10/2015 | 6/2016 |
|---|---|---|
| DRO | 1.3 | 0.823 |
| RRO | 0.637 | 0.491 J |
| PCE | ND | ND |
| TCE | ND | ND |
| Vinyl Chloride | **0.0076** | **0.0177** |

| MW-7 | 10/2015 | 6/2016 |
|---|---|---|
| DRO | 1.42 | 0.369 J |
| RRO | 0.447 J | 0.285 J |
| PCE | ND | ND |
| TCE | ND | ND |
| Vinyl Chloride | ND | 0.00167 |

| ADEC Cleanup Levels | |
|---|---|
| DRO | 1.5 |
| RRO | 1.1 |
| PCE | 0.005 |
| TCE | 0.005 |
| Vinyl Chloride | 0.002 |

Monitoring Well (Sampled in 2016)

Monitoring Well (Not Sampled in 2016)

All results are displayed in milligrams per liter (mg/L). Results in **red** exceed ADEC groundwater cleanup levels. Historical groundwater results are from CH2MHill, 1999a, 1999b; Hart Crowser, 2003; Clarus, 2010; and Restoration Science & Engineering, 2012.

2016 groundwater samples were submitted to the laboratory with an elevated temperature blank and, therefore, the 2016 results may have a low bias. Samples were submitted within hours of collection so impact to data was minor.

ND indicates that the analyte was not detected.

J indicates that the result is reported below the limit of quantitation.

0 45 90 180 Feet

Fairbanks Environmental Services
3538 International Street
Fairbanks, Alaska 99701

ALASKA RAILROAD CORPORATION

**DRO, RRO, PCE, TCE, and Vinyl Chloride Concentrations in Groundwater Samples**

2016 Report

Former Mammoth Trucking Site

Anchorage, Alaska

| CONTRACT: | FIGURE: | DATE: |
|---|---|---|
| 85304 | 4 | 8/16 |

**APPENDIX A**

**LABORATORY REPORT 1163342**

## Laboratory Report of Analysis

To: AK Railroad Corp (ARRC)
2400 Spenard Road, Suite 300
Anchorage, AK 99503
(907)277-7111

Report Number: **1163342**

Client Project: **Mammoth Trucking (ARRC)**

Dear Mike Boese,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Justin at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America Inc.

Justin Nelson
2016.07.08
16:01:41 -08'00'

SGS North America Inc.
Environmental Services – Alaska Division
Project Manager

Justin Nelson Date
Project Manager
Justin.Nelson@sgs.com

Print Date: 07/08/2016 11:55:37AM

## Case Narrative

SGS Client: **AK Railroad Corp (ARRC)**
SGS Project: **1163342**
Project Name/Site: **Mammoth Trucking (ARRC)**
Project Contact: **Mike Boese**

Refer to sample receipt form for information on sample condition.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.



SGS North America Inc.
200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

## Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indenmification and jurisdiction issues defined therein.

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The following descriptors or qualifiers may be found in your report:

| | |
|---|---|
| * | The analyte has exceeded allowable regulatory or control limits. |
| ! | Surrogate out of control limits. |
| B | Indicates the analyte is found in a blank associated with the sample. |
| CCV/CVA/CVB | Continuing Calibration Verification |
| CCCV/CVC/CVCA/CVCB | Closing Continuing Calibration Verification |
| CL | Control Limit |
| D | The analyte concentration is the result of a dilution. |
| DF | Dilution Factor |
| DL | Detection Limit (i.e., maximum method detection limit) |
| E | The analyte result is above the calibrated range. |
| F | Indicates value that is greater than or equal to the DL |
| GT | Greater Than |
| IB | Instrument Blank |
| ICV | Initial Calibration Verification |
| J | The quantitation is an estimation. |
| JL | The analyte was positively identified, but the quantitation is a low estimation. |
| LCS(D) | Laboratory Control Spike (Duplicate) |
| LOD | Limit of Detection (i.e., 1/2 of the LOQ) |
| LOQ | Limit of Quantitation (i.e., reporting or practical quantitation limit) |
| LT | Less Than |
| M | A matrix effect was present. |
| MB | Method Blank |
| MS(D) | Matrix Spike (Duplicate) |
| ND | Indicates the analyte is not detected. |
| Q | QC parameter out of acceptance range. |
| R | Rejected |
| RPD | Relative Percent Difference |
| U | Indicates the analyte was analyzed for but not detected. |

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.



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## Sample Summary

| Client Sample ID | Lab Sample ID | Collected | Received | Matrix |
|---|---|---|---|---|
| CHMWE1 | 1163342001 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| CHMWE2 | 1163342002 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| EMCONMW-4 | 1163342003 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| CHMWE5 | 1163342004 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| MW6 | 1163342005 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| MW7 | 1163342006 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| MWX | 1163342007 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| Rinsate | 1163342008 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |
| Trip Blank | 1163342009 | 06/22/2016 | 06/22/2016 | Water (Surface, Eff., Ground) |

| Method | Method Description |
|---|---|
| AK102 | DRO/RRO Low Volume Water |
| AK103 | DRO/RRO Low Volume Water |
| AK101 | Gasoline Range Organics (W) |
| SW8260B | Volatile Organic Compounds (W) FULL |



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## Detectable Results Summary

Client Sample ID: **CHMWE1**
Lab Sample ID: 1163342001

| | Parameter | Result | Units |
|---|---|---|---|
| **Volatile GC/MS** | Tetrachloroethene | 49.6 | ug/L |
| | Trichloroethene | 1.35 | ug/L |

Client Sample ID: **CHMWE2**
Lab Sample ID: 1163342002

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Diesel Range Organics | 7.18 | mg/L |
| | Residual Range Organics | 4.99 | mg/L |
| **Volatile Fuels** | Gasoline Range Organics | 0.0565J | mg/L |
| **Volatile GC/MS** | Benzene | 0.640 | ug/L |
| | cis-1,2-Dichloroethene | 5.73 | ug/L |
| | Isopropylbenzene (Cumene) | 0.560J | ug/L |
| | sec-Butylbenzene | 0.420J | ug/L |
| | Tetrachloroethene | 0.360J | ug/L |
| | Trichloroethene | 9.17 | ug/L |
| | Vinyl chloride | 2.31 | ug/L |

Client Sample ID: **EMCONMW-4**
Lab Sample ID: 1163342003

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Diesel Range Organics | 1.36 | mg/L |
| | Residual Range Organics | 1.11 | mg/L |
| **Volatile GC/MS** | Benzene | 0.260J | ug/L |
| | o-Xylene | 0.320J | ug/L |
| | P & M -Xylene | 0.620J | ug/L |
| | Toluene | 0.900J | ug/L |

Client Sample ID: **CHMWE5**
Lab Sample ID: 1163342004

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Diesel Range Organics | 0.539J | mg/L |
| | Residual Range Organics | 0.644 | mg/L |
| **Volatile GC/MS** | Benzene | 1.78 | ug/L |
| | cis-1,2-Dichloroethene | 0.730J | ug/L |
| | o-Xylene | 0.410J | ug/L |
| | P & M -Xylene | 0.750J | ug/L |
| | Toluene | 4.09 | ug/L |
| | Vinyl chloride | 22.4 | ug/L |
| | Xylenes (total) | 1.16J | ug/L |



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## Detectable Results Summary

Client Sample ID: **MW6**
Lab Sample ID: 1163342005

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Diesel Range Organics | 0.823 | mg/L |
| | Residual Range Organics | 0.491J | mg/L |
| **Volatile Fuels** | Gasoline Range Organics | 0.0746J | mg/L |
| **Volatile GC/MS** | 1,2,4-Trimethylbenzene | 1.89 | ug/L |
| | 1,3,5-Trimethylbenzene | 0.380J | ug/L |
| | 4-Isopropyltoluene | 0.450J | ug/L |
| | Benzene | 3.93 | ug/L |
| | cis-1,2-Dichloroethene | 1.09 | ug/L |
| | Isopropylbenzene (Cumene) | 0.730J | ug/L |
| | P & M -Xylene | 0.770J | ug/L |
| | sec-Butylbenzene | 0.440J | ug/L |
| | Vinyl chloride | 17.7 | ug/L |

Client Sample ID: **MW7**
Lab Sample ID: 1163342006

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Diesel Range Organics | 0.369J | mg/L |
| | Residual Range Organics | 0.285J | mg/L |
| **Volatile Fuels** | Gasoline Range Organics | 0.0520J | mg/L |
| **Volatile GC/MS** | Benzene | 0.600 | ug/L |
| | Vinyl chloride | 1.67 | ug/L |

Client Sample ID: **MWX**
Lab Sample ID: 1163342007

| | Parameter | Result | Units |
|---|---|---|---|
| **Semivolatile Organic Fuels** | Residual Range Organics | 0.182J | mg/L |
| **Volatile GC/MS** | Tetrachloroethene | 48.3 | ug/L |
| | Trichloroethene | 1.31 | ug/L |



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Results of **CHMWE1**

Client Sample ID: **CHMWE1**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342001
Lab Project ID: 1163342

Collection Date: 06/22/16 09:30
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.294 | U | 0.588 | 0.176 | mg/L | 1 | | 07/02/16 05:00 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 87 | | 50-150 | | % | 1 | | 07/02/16 05:00 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:00
Container ID: 1163342001-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.245 | U | 0.490 | 0.147 | mg/L | 1 | | 07/02/16 05:00 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 88.4 | | 50-150 | | % | 1 | | 07/02/16 05:00 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:00
Container ID: 1163342001-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 255 mL
Prep Extract Vol: 1 mL

Results of **CHMWE1**

Client Sample ID: **CHMWE1**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342001
Lab Project ID: 1163342

Collection Date: 06/22/16 09:30
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 16:32 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 99.7 | | 50-150 | | % | 1 | | 07/05/16 16:32 |

**Batch Information**

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 16:32
Container ID: 1163342001-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **CHMWE1**

Client Sample ID: **CHMWE1**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342001
Lab Project ID: 1163342

Collection Date: 06/22/16 09:30
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Benzene | 0.200 | U | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 17:09 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |

Results of **CHMWE1**

Client Sample ID: **CHMWE1**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342001
Lab Project ID: 1163342

Collection Date: 06/22/16 09:30
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 17:09 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:09 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 17:09 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 17:09 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Tetrachloroethene | 49.6 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Trichloroethene | 1.35 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:09 |
| Vinyl chloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:09 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 17:09 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 107 | | 81-118 | | % | 1 | | 06/28/16 17:09 |
| 4-Bromofluorobenzene (surr) | 94.4 | | 85-114 | | % | 1 | | 06/28/16 17:09 |
| Toluene-d8 (surr) | 99.4 | | 89-112 | | % | 1 | | 06/28/16 17:09 |

Results of **CHMWE1**

Client Sample ID: **CHMWE1**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342001
Lab Project ID: 1163342

Collection Date: 06/22/16 09:30
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 17:09
Container ID: 1163342001-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **CHMWE2**

Client Sample ID: **CHMWE2**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342002
Lab Project ID: 1163342

Collection Date: 06/22/16 11:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 7.18 | | 0.701 | 0.210 | mg/L | 1 | | 07/02/16 05:10 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 88.7 | | 50-150 | | % | 1 | | 07/02/16 05:10 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:10
Container ID: 1163342002-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 214 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 4.99 | | 0.584 | 0.175 | mg/L | 1 | | 07/02/16 05:10 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 86.6 | | 50-150 | | % | 1 | | 07/02/16 05:10 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:10
Container ID: 1163342002-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 214 mL
Prep Extract Vol: 1 mL

## Results of **CHMWE2**

Client Sample ID: **CHMWE2**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342002
Lab Project ID: 1163342

Collection Date: 06/22/16 11:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0565 | J | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 16:52 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 106 | | 50-150 | | % | 1 | | 07/05/16 16:52 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 16:52
Container ID: 1163342002-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **CHMWE2**

Client Sample ID: **CHMWE2**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342002
Lab Project ID: 1163342

Collection Date: 06/22/16 11:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Benzene | 0.640 | | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 17:26 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |

Results of **CHMWE2**

Client Sample ID: **CHMWE2**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342002
Lab Project ID: 1163342

Collection Date: 06/22/16 11:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 17:26 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| cis-1,2-Dichloroethene | 5.73 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:26 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Isopropylbenzene (Cumene) | 0.560 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 17:26 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 17:26 |
| sec-Butylbenzene | 0.420 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Tetrachloroethene | 0.360 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Trichloroethene | 9.17 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:26 |
| Vinyl chloride | 2.31 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:26 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 17:26 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 105 | | 81-118 | | % | 1 | | 06/28/16 17:26 |
| 4-Bromofluorobenzene (surr) | 96.4 | | 85-114 | | % | 1 | | 06/28/16 17:26 |
| Toluene-d8 (surr) | 100 | | 89-112 | | % | 1 | | 06/28/16 17:26 |

Results of **CHMWE2**

Client Sample ID: **CHMWE2**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342002
Lab Project ID: 1163342

Collection Date: 06/22/16 11:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 17:26
Container ID: 1163342002-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **EMCONMW-4**

Client Sample ID: **EMCONMW-4**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342003
Lab Project ID: 1163342

Collection Date: 06/22/16 12:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 1.36 | | 0.652 | 0.196 | mg/L | 1 | | 07/02/16 05:21 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 84.7 | | 50-150 | | % | 1 | | 07/02/16 05:21 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:21
Container ID: 1163342003-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 1.11 | | 0.543 | 0.163 | mg/L | 1 | | 07/02/16 05:21 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 87 | | 50-150 | | % | 1 | | 07/02/16 05:21 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:21
Container ID: 1163342003-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 230 mL
Prep Extract Vol: 1 mL

## Results of **EMCONMW-4**

Client Sample ID: **EMCONMW-4**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342003
Lab Project ID: 1163342

Collection Date: 06/22/16 12:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 17:11 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 98.6 | | 50-150 | | % | 1 | | 07/05/16 17:11 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 17:11
Container ID: 1163342003-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **EMCONMW-4**

Client Sample ID: **EMCONMW-4**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342003
Lab Project ID: 1163342

Collection Date: 06/22/16 12:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Benzene | 0.260 | J | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 17:43 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **EMCONMW-4**

Client Sample ID: **EMCONMW-4**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342003
Lab Project ID: 1163342

Collection Date: 06/22/16 12:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 17:43 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 17:43 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 17:43 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| o-Xylene | 0.320 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| P & M -Xylene | 0.620 | J | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 17:43 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Toluene | 0.900 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 17:43 |
| Vinyl chloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 17:43 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 17:43 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 105 | | 81-118 | | % | 1 | | 06/28/16 17:43 |
| 4-Bromofluorobenzene (surr) | 94.8 | | 85-114 | | % | 1 | | 06/28/16 17:43 |
| Toluene-d8 (surr) | 98.2 | | 89-112 | | % | 1 | | 06/28/16 17:43 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **EMCONMW-4**

Client Sample ID: **EMCONMW-4**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342003
Lab Project ID: 1163342

Collection Date: 06/22/16 12:55
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 17:43
Container ID: 1163342003-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **CHMWE5**

Client Sample ID: **CHMWE5**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342004
Lab Project ID: 1163342

Collection Date: 06/22/16 15:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.539 | J | 0.625 | 0.188 | mg/L | 1 | | 07/02/16 05:31 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 87.5 | | 50-150 | | % | 1 | | 07/02/16 05:31 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:31
Container ID: 1163342004-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.644 | | 0.521 | 0.156 | mg/L | 1 | | 07/02/16 05:31 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 86.3 | | 50-150 | | % | 1 | | 07/02/16 05:31 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:31
Container ID: 1163342004-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

Results of **CHMWE5**

Client Sample ID: **CHMWE5**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342004
Lab Project ID: 1163342

Collection Date: 06/22/16 15:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 17:30 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 98.8 | | 50-150 | | % | 1 | | 07/05/16 17:30 |

**Batch Information**

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 17:30
Container ID: 1163342004-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **CHMWE5**

Client Sample ID: **CHMWE5**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342004
Lab Project ID: 1163342

Collection Date: 06/22/16 15:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Benzene | 1.78 | | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 18:00 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **CHMWE5**

Client Sample ID: **CHMWE5**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342004
Lab Project ID: 1163342

Collection Date: 06/22/16 15:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 18:00 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| cis-1,2-Dichloroethene | 0.730 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:00 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 18:00 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| o-Xylene | 0.410 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| P & M -Xylene | 0.750 | J | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 18:00 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Toluene | 4.09 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:00 |
| Vinyl chloride | 22.4 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:00 |
| Xylenes (total) | 1.16 | J | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 18:00 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 105 | | 81-118 | | % | 1 | | 06/28/16 18:00 |
| 4-Bromofluorobenzene (surr) | 95.1 | | 85-114 | | % | 1 | | 06/28/16 18:00 |
| Toluene-d8 (surr) | 97.8 | | 89-112 | | % | 1 | | 06/28/16 18:00 |

Results of **CHMWE5**

Client Sample ID: **CHMWE5**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342004
Lab Project ID: 1163342

Collection Date: 06/22/16 15:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 18:00
Container ID: 1163342004-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW6**

Client Sample ID: **MW6**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342005
Lab Project ID: 1163342

Collection Date: 06/22/16 15:50
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.823 | | 0.600 | 0.180 | mg/L | 1 | | 07/02/16 05:42 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 87.8 | | 50-150 | | % | 1 | | 07/02/16 05:42 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:42
Container ID: 1163342005-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.491 | J | 0.500 | 0.150 | mg/L | 1 | | 07/02/16 05:42 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 88.1 | | 50-150 | | % | 1 | | 07/02/16 05:42 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:42
Container ID: 1163342005-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

## Results of **MW6**

Client Sample ID: **MW6**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342005
Lab Project ID: 1163342

Collection Date: 06/22/16 15:50
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0746 | J | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 17:49 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 103 | | 50-150 | | % | 1 | | 07/05/16 17:49 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 17:49
Container ID: 1163342005-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Print Date: 07/08/2016 11:55:42AM

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Results of **MW6**

Client Sample ID: **MW6**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342005
Lab Project ID: 1163342

Collection Date: 06/22/16 15:50
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2,4-Trimethylbenzene | 1.89 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,3,5-Trimethylbenzene | 0.380 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 4-Isopropyltoluene | 0.450 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Benzene | 3.93 | | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 18:16 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **MW6**

Client Sample ID: **MW6**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342005
Lab Project ID: 1163342

Collection Date: 06/22/16 15:50
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 18:16 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| cis-1,2-Dichloroethene | 1.09 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:16 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Isopropylbenzene (Cumene) | 0.730 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 18:16 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| P & M -Xylene | 0.770 | J | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 18:16 |
| sec-Butylbenzene | 0.440 | J | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:16 |
| Vinyl chloride | 17.7 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:16 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 18:16 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 106 | | 81-118 | | % | 1 | | 06/28/16 18:16 |
| 4-Bromofluorobenzene (surr) | 95 | | 85-114 | | % | 1 | | 06/28/16 18:16 |
| Toluene-d8 (surr) | 98.7 | | 89-112 | | % | 1 | | 06/28/16 18:16 |

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J flagging is activated

Results of **MW6**

Client Sample ID: **MW6**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342005
Lab Project ID: 1163342

Collection Date: 06/22/16 15:50
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 18:16
Container ID: 1163342005-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MW7**

Client Sample ID: **MW7**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342006
Lab Project ID: 1163342

Collection Date: 06/22/16 14:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.369 | J | 0.625 | 0.188 | mg/L | 1 | | 07/02/16 05:52 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 77.8 | | 50-150 | | % | 1 | | 07/02/16 05:52 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 05:52
Container ID: 1163342006-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.285 | J | 0.521 | 0.156 | mg/L | 1 | | 07/02/16 05:52 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 85 | | 50-150 | | % | 1 | | 07/02/16 05:52 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 05:52
Container ID: 1163342006-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 240 mL
Prep Extract Vol: 1 mL

## Results of **MW7**

Client Sample ID: **MW7**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342006
Lab Project ID: 1163342

Collection Date: 06/22/16 14:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0520 | J | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 18:08 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 104 | | 50-150 | | % | 1 | | 07/05/16 18:08 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 18:08
Container ID: 1163342006-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

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Results of **MW7**

Client Sample ID: **MW7**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342006
Lab Project ID: 1163342

Collection Date: 06/22/16 14:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Benzene | 0.600 | | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 18:33 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |

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Results of **MW7**

Client Sample ID: **MW7**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342006
Lab Project ID: 1163342

Collection Date: 06/22/16 14:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 18:33 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:33 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 18:33 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 18:33 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:33 |
| Vinyl chloride | 1.67 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:33 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 18:33 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 107 | | 81-118 | | % | 1 | | 06/28/16 18:33 |
| 4-Bromofluorobenzene (surr) | 94.4 | | 85-114 | | % | 1 | | 06/28/16 18:33 |
| Toluene-d8 (surr) | 99.9 | | 89-112 | | % | 1 | | 06/28/16 18:33 |

Results of **MW7**

Client Sample ID: **MW7**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342006
Lab Project ID: 1163342

Collection Date: 06/22/16 14:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 18:33
Container ID: 1163342006-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MWX**

Client Sample ID: **MWX**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342007
Lab Project ID: 1163342

Collection Date: 06/22/16 12:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.318 | U | 0.636 | 0.191 | mg/L | 1 | | 07/02/16 06:03 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 84.3 | | 50-150 | | % | 1 | | 07/02/16 06:03 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 06:03
Container ID: 1163342007-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 236 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.182 | J | 0.530 | 0.159 | mg/L | 1 | | 07/02/16 06:03 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 86.9 | | 50-150 | | % | 1 | | 07/02/16 06:03 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 06:03
Container ID: 1163342007-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 236 mL
Prep Extract Vol: 1 mL

## Results of **MWX**

Client Sample ID: **MWX**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342007
Lab Project ID: 1163342

Collection Date: 06/22/16 12:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 18:27 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 100 | | 50-150 | | % | 1 | | 07/05/16 18:27 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 18:27
Container ID: 1163342007-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **MWX**

Client Sample ID: **MWX**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342007
Lab Project ID: 1163342

Collection Date: 06/22/16 12:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Benzene | 0.200 | U | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 18:49 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **MWX**

Client Sample ID: **MWX**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342007
Lab Project ID: 1163342

Collection Date: 06/22/16 12:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 18:49 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 18:49 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 18:49 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 18:49 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Tetrachloroethene | 48.3 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Trichloroethene | 1.31 | | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 18:49 |
| Vinyl chloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 18:49 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 18:49 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 107 | | 81-118 | | % | 1 | | 06/28/16 18:49 |
| 4-Bromofluorobenzene (surr) | 92.4 | | 85-114 | | % | 1 | | 06/28/16 18:49 |
| Toluene-d8 (surr) | 98.9 | | 89-112 | | % | 1 | | 06/28/16 18:49 |

Results of **MWX**

Client Sample ID: **MWX**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342007
Lab Project ID: 1163342

Collection Date: 06/22/16 12:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 18:49
Container ID: 1163342007-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Rinsate**

Client Sample ID: **Rinsate**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342008
Lab Project ID: 1163342

Collection Date: 06/22/16 10:10
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Semivolatile Organic Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Diesel Range Organics | 0.300 | U | 0.600 | 0.180 | mg/L | 1 | | 07/02/16 06:13 |
| **Surrogates** | | | | | | | | |
| 5a Androstane (surr) | 83.8 | | 50-150 | | % | 1 | | 07/02/16 06:13 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 07/02/16 06:13
Container ID: 1163342008-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Residual Range Organics | 0.250 | U | 0.500 | 0.150 | mg/L | 1 | | 07/02/16 06:13 |
| **Surrogates** | | | | | | | | |
| n-Triacontane-d62 (surr) | 84.7 | | 50-150 | | % | 1 | | 07/02/16 06:13 |

**Batch Information**

Analytical Batch: XFC12488
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 07/02/16 06:13
Container ID: 1163342008-G

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 07/01/16 09:52
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

## Results of **Rinsate**

Client Sample ID: **Rinsate**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342008
Lab Project ID: 1163342

Collection Date: 06/22/16 10:10
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 18:46 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 99.5 | | 50-150 | | % | 1 | | 07/05/16 18:46 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 18:46
Container ID: 1163342008-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Rinsate**

Client Sample ID: **Rinsate**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342008
Lab Project ID: 1163342

Collection Date: 06/22/16 10:10
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Benzene | 0.200 | U | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 19:06 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |

Results of **Rinsate**

Client Sample ID: **Rinsate**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342008
Lab Project ID: 1163342

Collection Date: 06/22/16 10:10
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 19:06 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 19:06 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 19:06 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 19:06 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 19:06 |
| Vinyl chloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 19:06 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 19:06 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 107 | | 81-118 | | % | 1 | | 06/28/16 19:06 |
| 4-Bromofluorobenzene (surr) | 93.5 | | 85-114 | | % | 1 | | 06/28/16 19:06 |
| Toluene-d8 (surr) | 98.2 | | 89-112 | | % | 1 | | 06/28/16 19:06 |

Results of **Rinsate**

Client Sample ID: **Rinsate**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342008
Lab Project ID: 1163342

Collection Date: 06/22/16 10:10
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 19:06
Container ID: 1163342008-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

## Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342009
Lab Project ID: 1163342

Collection Date: 06/22/16 08:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

## Results by **Volatile Fuels**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Gasoline Range Organics | 0.0500 | U | 0.100 | 0.0310 | mg/L | 1 | | 07/05/16 15:35 |
| **Surrogates** | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 104 | | 50-150 | | % | 1 | | 07/05/16 15:35 |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Analyst: ST
Analytical Date/Time: 07/05/16 15:35
Container ID: 1163342009-A

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 07/05/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342009
Lab Project ID: 1163342

Collection Date: 06/22/16 08:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1,1-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1,2,2-Tetrachloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1,2-Trichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1-Dichloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,1-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2,3-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2,3-Trichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2,4-Trichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2,4-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2-Dibromo-3-chloropropane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2-Dibromoethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2-Dichloroethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| 1,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,3,5-Trimethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,3-Dichlorobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 1,3-Dichloropropane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| 1,4-Dichlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| 2,2-Dichloropropane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 2-Butanone (MEK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| 2-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 2-Hexanone | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| 4-Chlorotoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 4-Isopropyltoluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| 4-Methyl-2-pentanone (MIBK) | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Benzene | 0.200 | U | 0.400 | 0.120 | ug/L | 1 | | 06/28/16 13:18 |
| Bromobenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Bromochloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Bromodichloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| Bromoform | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Bromomethane | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Carbon disulfide | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Carbon tetrachloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Chlorobenzene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| Chloroethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |

Print Date: 07/08/2016 11:55:42AM

J flagging is activated

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342009
Lab Project ID: 1163342

Collection Date: 06/22/16 08:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

| Parameter | Result | Qual | LOQ/CL | DL | Units | DF | Allowable Limits | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| Chloroform | 0.500 | U | 1.00 | 0.300 | ug/L | 1 | | 06/28/16 13:18 |
| Chloromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| cis-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| cis-1,3-Dichloropropene | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| Dibromochloromethane | 0.250 | U | 0.500 | 0.150 | ug/L | 1 | | 06/28/16 13:18 |
| Dibromomethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Dichlorodifluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Ethylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Freon-113 | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Hexachlorobutadiene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Isopropylbenzene (Cumene) | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Methylene chloride | 2.50 | U | 5.00 | 1.00 | ug/L | 1 | | 06/28/16 13:18 |
| Methyl-t-butyl ether | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Naphthalene | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| n-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| n-Propylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| o-Xylene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| P & M -Xylene | 1.00 | U | 2.00 | 0.620 | ug/L | 1 | | 06/28/16 13:18 |
| sec-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Styrene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| tert-Butylbenzene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Tetrachloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Toluene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| trans-1,2-Dichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| trans-1,3-Dichloropropene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Trichloroethene | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Trichlorofluoromethane | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Vinyl acetate | 5.00 | U | 10.0 | 3.10 | ug/L | 1 | | 06/28/16 13:18 |
| Vinyl chloride | 0.500 | U | 1.00 | 0.310 | ug/L | 1 | | 06/28/16 13:18 |
| Xylenes (total) | 1.50 | U | 3.00 | 1.00 | ug/L | 1 | | 06/28/16 13:18 |
| **Surrogates** | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 105 | | 81-118 | | % | 1 | | 06/28/16 13:18 |
| 4-Bromofluorobenzene (surr) | 96 | | 85-114 | | % | 1 | | 06/28/16 13:18 |
| Toluene-d8 (surr) | 99.6 | | 89-112 | | % | 1 | | 06/28/16 13:18 |

Results of **Trip Blank**

Client Sample ID: **Trip Blank**
Client Project ID: **Mammoth Trucking (ARRC)**
Lab Sample ID: 1163342009
Lab Project ID: 1163342

Collection Date: 06/22/16 08:00
Received Date: 06/22/16 16:30
Matrix: Water (Surface, Eff., Ground)
Solids (%):
Location:

Results by **Volatile GC/MS**

**Batch Information**

Analytical Batch: VMS15910
Analytical Method: SW8260B
Analyst: NRB
Analytical Date/Time: 06/28/16 13:18
Container ID: 1163342009-D

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 06/28/16 06:00
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

## Method Blank

Blank ID: MB for HBN 1737730 [VXX/29031]
Blank Lab ID: 1333197

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

## Results by **SW8260B**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | 0.250U | 0.500 | 0.150 | ug/L |
| 1,1,1-Trichloroethane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,1,2,2-Tetrachloroethane | 0.250U | 0.500 | 0.150 | ug/L |
| 1,1,2-Trichloroethane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,1-Dichloroethane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,1-Dichloroethene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,1-Dichloropropene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2,3-Trichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2,3-Trichloropropane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2,4-Trichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2,4-Trimethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2-Dibromo-3-chloropropane | 5.00U | 10.0 | 3.10 | ug/L |
| 1,2-Dibromoethane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,2-Dichloroethane | 0.250U | 0.500 | 0.150 | ug/L |
| 1,2-Dichloropropane | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3,5-Trimethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichlorobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| 1,3-Dichloropropane | 0.250U | 0.500 | 0.150 | ug/L |
| 1,4-Dichlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| 2,2-Dichloropropane | 0.500U | 1.00 | 0.310 | ug/L |
| 2-Butanone (MEK) | 5.00U | 10.0 | 3.10 | ug/L |
| 2-Chlorotoluene | 0.500U | 1.00 | 0.310 | ug/L |
| 2-Hexanone | 5.00U | 10.0 | 3.10 | ug/L |
| 4-Chlorotoluene | 0.500U | 1.00 | 0.310 | ug/L |
| 4-Isopropyltoluene | 0.500U | 1.00 | 0.310 | ug/L |
| 4-Methyl-2-pentanone (MIBK) | 5.00U | 10.0 | 3.10 | ug/L |
| Benzene | 0.200U | 0.400 | 0.120 | ug/L |
| Bromobenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Bromochloromethane | 0.500U | 1.00 | 0.310 | ug/L |
| Bromodichloromethane | 0.250U | 0.500 | 0.150 | ug/L |
| Bromoform | 0.500U | 1.00 | 0.310 | ug/L |
| Bromomethane | 5.00U | 10.0 | 3.10 | ug/L |
| Carbon disulfide | 5.00U | 10.0 | 3.10 | ug/L |
| Carbon tetrachloride | 0.500U | 1.00 | 0.310 | ug/L |
| Chlorobenzene | 0.250U | 0.500 | 0.150 | ug/L |
| Chloroethane | 0.500U | 1.00 | 0.310 | ug/L |
| Chloroform | 0.500U | 1.00 | 0.300 | ug/L |

## Method Blank

Blank ID: MB for HBN 1737730 [VXX/29031]
Blank Lab ID: 1333197

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

Results by **SW8260B**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Chloromethane | 0.500U | 1.00 | 0.310 | ug/L |
| cis-1,2-Dichloroethene | 0.500U | 1.00 | 0.310 | ug/L |
| cis-1,3-Dichloropropene | 0.250U | 0.500 | 0.150 | ug/L |
| Dibromochloromethane | 0.250U | 0.500 | 0.150 | ug/L |
| Dibromomethane | 0.500U | 1.00 | 0.310 | ug/L |
| Dichlorodifluoromethane | 0.500U | 1.00 | 0.310 | ug/L |
| Ethylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Freon-113 | 5.00U | 10.0 | 3.10 | ug/L |
| Hexachlorobutadiene | 0.500U | 1.00 | 0.310 | ug/L |
| Isopropylbenzene (Cumene) | 0.500U | 1.00 | 0.310 | ug/L |
| Methylene chloride | 2.50U | 5.00 | 1.00 | ug/L |
| Methyl-t-butyl ether | 5.00U | 10.0 | 3.10 | ug/L |
| Naphthalene | 5.00U | 10.0 | 3.10 | ug/L |
| n-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| n-Propylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| o-Xylene | 0.500U | 1.00 | 0.310 | ug/L |
| P & M -Xylene | 1.00U | 2.00 | 0.620 | ug/L |
| sec-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Styrene | 0.500U | 1.00 | 0.310 | ug/L |
| tert-Butylbenzene | 0.500U | 1.00 | 0.310 | ug/L |
| Tetrachloroethene | 0.500U | 1.00 | 0.310 | ug/L |
| Toluene | 0.500U | 1.00 | 0.310 | ug/L |
| trans-1,2-Dichloroethene | 0.500U | 1.00 | 0.310 | ug/L |
| trans-1,3-Dichloropropene | 0.500U | 1.00 | 0.310 | ug/L |
| Trichloroethene | 0.500U | 1.00 | 0.310 | ug/L |
| Trichlorofluoromethane | 0.500U | 1.00 | 0.310 | ug/L |
| Vinyl acetate | 5.00U | 10.0 | 3.10 | ug/L |
| Vinyl chloride | 0.500U | 1.00 | 0.310 | ug/L |
| Xylenes (total) | 1.50U | 3.00 | 1.00 | ug/L |
| **Surrogates** | | | | |
| 1,2-Dichloroethane-D4 (surr) | 105 | 81-118 | | % |
| 4-Bromofluorobenzene (surr) | 97.4 | 85-114 | | % |
| Toluene-d8 (surr) | 100 | 89-112 | | % |

## Method Blank

Blank ID: MB for HBN 1737730 [VXX/29031]
Blank Lab ID: 1333197

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

## Results by **SW8260B**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|

### Batch Information

Analytical Batch: VMS15910
Analytical Method: SW8260B
Instrument: VSA Agilent GC/MS 7890B/5977A
Analyst: NRB
Analytical Date/Time: 6/28/2016 9:55:00AM

Prep Batch: VXX29031
Prep Method: SW5030B
Prep Date/Time: 6/28/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL



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## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [VXX29031]
Blank Spike Lab ID: 1333198
Date Analyzed: 06/28/2016 10:39

Spike Duplicate ID: LCSD for HBN 1163342 [VXX29031]
Spike Duplicate Lab ID: 1333199
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

Results by **SW8260B**

| | Blank Spike (ug/L) | | | Spike Duplicate (ug/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| 1,1,1,2-Tetrachloroethane | 30 | 31.8 | 106 | 30 | 30.4 | 101 | ( 78-124 ) | 4.70 | (< 20 ) |
| 1,1,1-Trichloroethane | 30 | 31.5 | 105 | 30 | 30.6 | 102 | ( 74-131 ) | 3.00 | (< 20 ) |
| 1,1,2,2-Tetrachloroethane | 30 | 29.7 | 99 | 30 | 29.0 | 97 | ( 71-121 ) | 2.30 | (< 20 ) |
| 1,1,2-Trichloroethane | 30 | 30.0 | 100 | 30 | 29.3 | 98 | ( 80-119 ) | 2.50 | (< 20 ) |
| 1,1-Dichloroethane | 30 | 31.0 | 103 | 30 | 30.0 | 100 | ( 77-125 ) | 3.40 | (< 20 ) |
| 1,1-Dichloroethene | 30 | 32.0 | 107 | 30 | 31.0 | 103 | ( 71-131 ) | 3.00 | (< 20 ) |
| 1,1-Dichloropropene | 30 | 31.1 | 104 | 30 | 30.0 | 100 | ( 79-125 ) | 3.60 | (< 20 ) |
| 1,2,3-Trichlorobenzene | 30 | 31.5 | 105 | 30 | 30.6 | 102 | ( 69-129 ) | 2.80 | (< 20 ) |
| 1,2,3-Trichloropropane | 30 | 30.2 | 101 | 30 | 29.2 | 98 | ( 73-122 ) | 3.30 | (< 20 ) |
| 1,2,4-Trichlorobenzene | 30 | 31.3 | 104 | 30 | 30.1 | 100 | ( 69-130 ) | 4.10 | (< 20 ) |
| 1,2,4-Trimethylbenzene | 30 | 31.1 | 104 | 30 | 29.3 | 98 | ( 79-124 ) | 6.10 | (< 20 ) |
| 1,2-Dibromo-3-chloropropane | 30 | 30.4 | 101 | 30 | 31.4 | 105 | ( 62-128 ) | 3.00 | (< 20 ) |
| 1,2-Dibromoethane | 30 | 30.9 | 103 | 30 | 30.3 | 101 | ( 77-121 ) | 2.10 | (< 20 ) |
| 1,2-Dichlorobenzene | 30 | 30.2 | 101 | 30 | 28.6 | 95 | ( 80-119 ) | 5.40 | (< 20 ) |
| 1,2-Dichloroethane | 30 | 30.0 | 100 | 30 | 29.4 | 98 | ( 73-128 ) | 2.10 | (< 20 ) |
| 1,2-Dichloropropane | 30 | 30.7 | 102 | 30 | 30.2 | 101 | ( 78-122 ) | 1.60 | (< 20 ) |
| 1,3,5-Trimethylbenzene | 30 | 31.2 | 104 | 30 | 28.8 | 96 | ( 75-124 ) | 7.90 | (< 20 ) |
| 1,3-Dichlorobenzene | 30 | 30.4 | 101 | 30 | 28.7 | 96 | ( 80-119 ) | 5.80 | (< 20 ) |
| 1,3-Dichloropropane | 30 | 29.9 | 100 | 30 | 29.4 | 98 | ( 80-119 ) | 1.90 | (< 20 ) |
| 1,4-Dichlorobenzene | 30 | 30.8 | 103 | 30 | 29.1 | 97 | ( 79-118 ) | 5.40 | (< 20 ) |
| 2,2-Dichloropropane | 30 | 31.9 | 106 | 30 | 30.6 | 102 | ( 60-139 ) | 4.00 | (< 20 ) |
| 2-Butanone (MEK) | 90 | 101 | 112 | 90 | 112 | 125 | ( 56-143 ) | 10.70 | (< 20 ) |
| 2-Chlorotoluene | 30 | 30.6 | 102 | 30 | 28.6 | 95 | ( 79-122 ) | 6.70 | (< 20 ) |
| 2-Hexanone | 90 | 98.9 | 110 | 90 | 104 | 115 | ( 57-139 ) | 4.60 | (< 20 ) |
| 4-Chlorotoluene | 30 | 30.6 | 102 | 30 | 28.8 | 96 | ( 78-122 ) | 6.00 | (< 20 ) |
| 4-Isopropyltoluene | 30 | 32.0 | 107 | 30 | 30.6 | 102 | ( 77-127 ) | 4.50 | (< 20 ) |
| 4-Methyl-2-pentanone (MIBK) | 90 | 99.5 | 111 | 90 | 104 | 116 | ( 67-130 ) | 4.70 | (< 20 ) |
| Benzene | 30 | 29.9 | 100 | 30 | 28.7 | 96 | ( 79-120 ) | 3.90 | (< 20 ) |
| Bromobenzene | 30 | 30.1 | 100 | 30 | 28.6 | 95 | ( 80-120 ) | 4.90 | (< 20 ) |
| Bromochloromethane | 30 | 30.3 | 101 | 30 | 29.6 | 99 | ( 78-123 ) | 2.20 | (< 20 ) |
| Bromodichloromethane | 30 | 31.3 | 104 | 30 | 30.6 | 102 | ( 79-125 ) | 2.20 | (< 20 ) |
| Bromoform | 30 | 32.1 | 107 | 30 | 32.1 | 107 | ( 66-130 ) | 0.19 | (< 20 ) |
| Bromomethane | 30 | 35.9 | 120 | 30 | 34.4 | 115 | ( 53-141 ) | 4.50 | (< 20 ) |
| Carbon disulfide | 45 | 46.6 | 103 | 45 | 44.9 | 100 | ( 64-133 ) | 3.70 | (< 20 ) |

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [VXX29031]
Blank Spike Lab ID: 1333198
Date Analyzed: 06/28/2016 10:39

Spike Duplicate ID: LCSD for HBN 1163342 [VXX29031]
Spike Duplicate Lab ID: 1333199
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

Results by **SW8260B**

| | Blank Spike (ug/L) | | | Spike Duplicate (ug/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Carbon tetrachloride | 30 | 32.2 | 107 | 30 | 31.0 | 103 | ( 72-136 ) | 3.80 | (< 20 ) |
| Chlorobenzene | 30 | 30.2 | 101 | 30 | 29.3 | 98 | ( 82-118 ) | 3.20 | (< 20 ) |
| Chloroethane | 30 | 31.8 | 106 | 30 | 31.3 | 104 | ( 60-138 ) | 1.60 | (< 20 ) |
| Chloroform | 30 | 29.2 | 97 | 30 | 28.2 | 94 | ( 79-124 ) | 3.50 | (< 20 ) |
| Chloromethane | 30 | 28.0 | 93 | 30 | 26.4 | 88 | ( 50-139 ) | 5.70 | (< 20 ) |
| cis-1,2-Dichloroethene | 30 | 30.7 | 102 | 30 | 29.8 | 99 | ( 78-123 ) | 3.00 | (< 20 ) |
| cis-1,3-Dichloropropene | 30 | 30.8 | 103 | 30 | 30.1 | 100 | ( 75-124 ) | 2.30 | (< 20 ) |
| Dibromochloromethane | 30 | 31.6 | 105 | 30 | 30.9 | 103 | ( 74-126 ) | 2.10 | (< 20 ) |
| Dibromomethane | 30 | 30.8 | 103 | 30 | 30.6 | 102 | ( 79-123 ) | 0.36 | (< 20 ) |
| Dichlorodifluoromethane | 30 | 31.3 | 104 | 30 | 30.6 | 102 | ( 32-152 ) | 2.50 | (< 20 ) |
| Ethylbenzene | 30 | 31.0 | 103 | 30 | 29.4 | 98 | ( 79-121 ) | 5.30 | (< 20 ) |
| Freon-113 | 45 | 49.2 | 109 | 45 | 48.1 | 107 | ( 70-136 ) | 2.20 | (< 20 ) |
| Hexachlorobutadiene | 30 | 32.8 | 109 | 30 | 31.2 | 104 | ( 66-134 ) | 4.90 | (< 20 ) |
| Isopropylbenzene (Cumene) | 30 | 31.7 | 106 | 30 | 30.0 | 100 | ( 72-131 ) | 5.60 | (< 20 ) |
| Methylene chloride | 30 | 27.6 | 92 | 30 | 27.2 | 91 | ( 74-124 ) | 1.30 | (< 20 ) |
| Methyl-t-butyl ether | 45 | 46.4 | 103 | 45 | 46.5 | 103 | ( 71-124 ) | 0.22 | (< 20 ) |
| Naphthalene | 30 | 31.4 | 105 | 30 | 31.2 | 104 | ( 61-128 ) | 0.61 | (< 20 ) |
| n-Butylbenzene | 30 | 32.9 | 110 | 30 | 30.8 | 103 | ( 75-128 ) | 6.40 | (< 20 ) |
| n-Propylbenzene | 30 | 30.6 | 102 | 30 | 29.1 | 97 | ( 76-126 ) | 5.30 | (< 20 ) |
| o-Xylene | 30 | 30.5 | 102 | 30 | 29.1 | 97 | ( 78-122 ) | 4.60 | (< 20 ) |
| P & M -Xylene | 60 | 62.7 | 104 | 60 | 59.3 | 99 | ( 80-121 ) | 5.60 | (< 20 ) |
| sec-Butylbenzene | 30 | 31.8 | 106 | 30 | 29.6 | 99 | ( 77-126 ) | 6.90 | (< 20 ) |
| Styrene | 30 | 31.4 | 105 | 30 | 29.8 | 99 | ( 78-123 ) | 5.10 | (< 20 ) |
| tert-Butylbenzene | 30 | 31.3 | 104 | 30 | 29.5 | 98 | ( 78-124 ) | 6.00 | (< 20 ) |
| Tetrachloroethene | 30 | 32.0 | 107 | 30 | 30.4 | 101 | ( 74-129 ) | 5.10 | (< 20 ) |
| Toluene | 30 | 29.9 | 100 | 30 | 28.4 | 95 | ( 80-121 ) | 5.00 | (< 20 ) |
| trans-1,2-Dichloroethene | 30 | 31.2 | 104 | 30 | 32.8 | 109 | ( 75-124 ) | 4.80 | (< 20 ) |
| trans-1,3-Dichloropropene | 30 | 31.1 | 104 | 30 | 29.6 | 99 | ( 73-127 ) | 4.90 | (< 20 ) |
| Trichloroethene | 30 | 31.0 | 103 | 30 | 29.8 | 100 | ( 79-123 ) | 3.90 | (< 20 ) |
| Trichlorofluoromethane | 30 | 32.8 | 109 | 30 | 32.0 | 107 | ( 65-141 ) | 2.50 | (< 20 ) |
| Vinyl acetate | 30 | 32.9 | 110 | 30 | 33.2 | 111 | ( 54-146 ) | 0.73 | (< 20 ) |
| Vinyl chloride | 30 | 31.4 | 105 | 30 | 30.5 | 102 | ( 58-137 ) | 2.90 | (< 20 ) |
| Xylenes (total) | 90 | 93.1 | 103 | 90 | 88.4 | 98 | ( 79-121 ) | 5.20 | (< 20 ) |

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [VXX29031]
Blank Spike Lab ID: 1333198
Date Analyzed: 06/28/2016 10:39

Spike Duplicate ID: LCSD for HBN 1163342 [VXX29031]
Spike Duplicate Lab ID: 1333199
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

## Results by **SW8260B**

| | Blank Spike (%) | | | Spike Duplicate (%) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| **Surrogates** | | | | | | | | | |
| 1,2-Dichloroethane-D4 (surr) | 30 | 102 | 102 | 30 | 104 | 104 | ( 81-118 ) | 1.70 | |
| 4-Bromofluorobenzene (surr) | 30 | 96.7 | 97 | 30 | 94.4 | 94 | ( 85-114 ) | 2.30 | |
| Toluene-d8 (surr) | 30 | 99.5 | 100 | 30 | 99.6 | 100 | ( 89-112 ) | 0.17 | |

## Batch Information

Analytical Batch: **VMS15910**
Analytical Method: **SW8260B**
Instrument: **VSA Agilent GC/MS 7890B/5977A**
Analyst: **NRB**

Prep Batch: **VXX29031**
Prep Method: **SW5030B**
Prep Date/Time: **06/28/2016 06:00**
Spike Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 30 ug/L Extract Vol: 5 mL



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## Method Blank

Blank ID: MB for HBN 1738368 [VXX/29071]
Blank Lab ID: 1334524

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

## Results by **AK101**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Gasoline Range Organics | 0.0500U | 0.100 | 0.0310 | mg/L |
| **Surrogates** | | | | |
| 4-Bromofluorobenzene (surr) | 99.9 | 50-150 | | % |

## Batch Information

Analytical Batch: VFC13112
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: ST
Analytical Date/Time: 7/5/2016 12:33:00PM

Prep Batch: VXX29071
Prep Method: SW5030B
Prep Date/Time: 7/5/2016 6:00:00AM
Prep Initial Wt./Vol.: 5 mL
Prep Extract Vol: 5 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [VXX29071]
Blank Spike Lab ID: 1334527
Date Analyzed: 07/05/2016 13:30

Spike Duplicate ID: LCSD for HBN 1163342 [VXX29071]
Spike Duplicate Lab ID: 1334528
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008, 1163342009

## Results by **AK101**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Gasoline Range Organics | 1.00 | 1.04 | 104 | 1.00 | 0.957 | 96 | ( 60-120 ) | 8.10 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 4-Bromofluorobenzene (surr) | 0.0500 | 105 | 105 | 0.0500 | 104 | 104 | ( 50-150 ) | 0.23 | |

## Batch Information

Analytical Batch: **VFC13112**
Analytical Method: **AK101**
Instrument: **Agilent 7890 PID/FID**
Analyst: **ST**

Prep Batch: **VXX29071**
Prep Method: **SW5030B**
Prep Date/Time: **07/05/2016 06:00**
Spike Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL
Dupe Init Wt./Vol.: 1.00 mg/L Extract Vol: 5 mL



SGS North America Inc.
200 West Potter Drive Anchorage, AK 95518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

## Method Blank

Blank ID: MB for HBN 1737874 [XXX/35686]
Blank Lab ID: 1333691

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008

## Results by **AK102**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Diesel Range Organics | 0.300U | 0.600 | 0.180 | mg/L |
| **Surrogates** | | | | |
| 5a Androstane (surr) | 88.9 | 60-120 | | % |

## Batch Information

Analytical Batch: XFC12488
Analytical Method: AK102
Instrument: Agilent 7890B R
Analyst: S.G
Analytical Date/Time: 7/2/2016 3:58:00AM

Prep Batch: XXX35686
Prep Method: SW3520C
Prep Date/Time: 7/1/2016 9:52:44AM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [XXX35686]
Blank Spike Lab ID: 1333692
Date Analyzed: 07/02/2016 04:08

Spike Duplicate ID: LCSD for HBN 1163342 [XXX35686]
Spike Duplicate Lab ID: 1333693
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008

## Results by **AK102**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Diesel Range Organics | 20 | 20.7 | 104 | 20 | 21.6 | 108 | ( 75-125 ) | 4.10 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| 5a Androstane (surr) | 0.4 | 103 | 103 | 0.4 | 104 | 104 | ( 60-120 ) | 1.30 | |

## Batch Information

Analytical Batch: **XFC12488**
Analytical Method: **AK102**
Instrument: **Agilent 7890B R**
Analyst: **S.G**

Prep Batch: **XXX35686**
Prep Method: **SW3520C**
Prep Date/Time: **07/01/2016 09:52**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



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## Method Blank

Blank ID: MB for HBN 1737874 [XXX/35686]
Blank Lab ID: 1333691

Matrix: Water (Surface, Eff., Ground)

QC for Samples:
1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008

## Results by **AK103**

| Parameter | Results | LOQ/CL | DL | Units |
|---|---|---|---|---|
| Residual Range Organics | 0.250U | 0.500 | 0.150 | mg/L |
| **Surrogates** | | | | |
| nA riacontaneAd62 (surr) | 88 | 60A120 | | % |

## Batch Information

hnalytical BatcF: XKC12488
hnalytical MetFod: hT103
Instrument: hgilent 7890B R
hnalyst: S.G
hnalytical Date/- ime: 7/2/2016 3:58:00hM

Prep BatcF: XXX35686
Prep MetFod: SW3520C
Prep Date/- ime: 7/1/2016 9:52:44hM
Prep Initial Wt./Vol.: 250 mL
Prep Extract Vol: 1 mL

Print Date: 07/08/2016 11:55:58hM

## Blank Spike Summary

Blank Spike ID: LCS for HBN 1163342 [XXX35686]
Blank Spike Lab ID: 1333692
Date Analyzed: 07/02/2016 04:08

Spike Duplicate ID: LCSD for HBN 1163342 [XXX35686]
Spike Duplicate Lab ID: 1333693
Matrix: Water (Surface, Eff., Ground)

QC for Samples: 1163342001, 1163342002, 1163342003, 1163342004, 1163342005, 1163342006, 1163342007, 1163342008

## Results by **AK103**

| | Blank Spike (mg/L) | | | Spike Duplicate (mg/L) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Parameter | Spike | Result | Rec (%) | Spike | Result | Rec (%) | CL | RPD (%) | RPD CL |
| Residual Range Organics | 20 | 21.3 | 106 | 20 | 22.1 | 110 | ( 60-120 ) | 3.70 | (< 20 ) |
| **Surrogates** | | | | | | | | | |
| n-Triacontane-d62 (surr) | 0.4 | 88.8 | 89 | 0.4 | 90.8 | 91 | ( 60-120 ) | 2.20 | |

## Batch Information

Analytical Batch: **XFC12488**
Analytical Method: **AK103**
Instrument: **Agilent 7890B R**
Analyst: **S.G**

Prep Batch: **XXX35686**
Prep Method: **SW3520C**
Prep Date/Time: **07/01/2016 09:52**
Spike Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL
Dupe Init Wt./Vol.: 20 mg/L Extract Vol: 1 mL



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# SGS North Ame
# CHAIN OF CUSTOI

1163342

Locations Nationwide

Alaska Maryland
New Jersey New York
North Carolina Ohio
West Virgina

www.us.sgs.com

CLIENT: Fairbanks Enviromental Services

CONTACT: Mike Boese PHONE NO: 907-277-7111

PROJECT/SITE: **Mammoth Trucking (ARRC)**

REPORTS TO: Mike Boese E-MAIL: MBoese@FESalaska.com

INVOICE TO: ARRC **Project: ARRC-2016**

**CONTRACT NUMBER: ARRC - 265-2429**

SGS Reference #:

page 1 of 1

| LAB NO. | SAMPLE IDENTIFICATION | DATE | TIME | MATRIX/ MATRIX CODE | # CONTAINERS | Preservative | HCl | HCl | HCl | | | | | | | REMARKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | SAMPLE TYPE C = COMP G = GRAB MI = Multi Incremental Samples | GRO (AK101) | DRO/RRO (AK102/103) | VOC (8260B) | | | | | | | |
| (1) A-H | CHMWE1 | 6/22/2016 | 0930 | Water | 8 | G | x | x | x | | | | | | | |
| (2) A-H | CHMWE2 | 6/22/2016 | 1155 | Water | 8 | G | x | x | x | | | | | | | |
| (3) A-H | EMCONMW-4 | 6/22/2016 | 1255 | Water | 8 | G | x | x | x | | | | | | | |
| (4) A-H | CHMWE5 | 6/22/2016 | 1500 | Water | 8 | G | x | x | x | | | | | | | |
| (5) A-H | MW6 | 6/22/2016 | 1550 | Water | 8 | G | x | x | x | | | | | | | |
| (6) A-H | MW7 | 6/22/2016 | 1400 | Water | 8 | G | x | x | x | | | | | | | |
| (7) A-H | MWX | 6/22/2016 | 1200 | Water | 8 | G | x | x | x | | | | | | | |
| NKW 6/23/16 (9) A-E | Trip Blank | 6/22/2016 | 800 | Water | 6 | G | x | | x | (9) A-E | | | | | | |
| (8) A-H | Rinsate | 6/22/16 | 1010 | Water | 8 | EB | ✓ | ✓ | ✓ | | | | | | | Added by JM 6/22 |

| | | | |
|---|---|---|---|
| Collected/Relinquished By: (1) Michael Boese | Date 6/22/16 | Time 1630 | Received By: |
| Relinquished By: (2) | Date | Time | Received By: |
| Relinquished By: (3) | Date | Time | Received By: |
| Relinquished By: (4) | Date 6/22/16 | Time 1630 | Received For Laboratory By: |

DOD Project? NO

Cooler ID 16 2201 ~~10515-01~~

Cooler Temp °C

Special Deliverable Requirements:

**Level 2 Data Package, EQuiS, and PDF. No hard copy required.**

Requested Turnaround Time and-or Special Instructions:

Quote 10402, Normal TAT, Bill ARRC directly (265-2429)

Temperature Blank °C: 9.9 #247

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

IF IB

hand delivered



☐ 200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
☐ 5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1

SGS

# e-SAMPLE RECEIPT FORM

**1163342**

| Review Criteria | Y/N (yes/no) | Exceptions Noted below |
|---|---|---|
| | | ☐ exemption permitted if sampler hand carries/delivers. |
| Were Custody Seals intact? Note # & location | Y | 1-F, 1-B |
| COC accompanied samples? | Y | |
| Y **exemption permitted if chilled & collected <8hrs ago or chlling not required (i.e., waste, oil) | | |
| Temperature blank compliant* (i.e., 0-6 °C after CF)? | N | Cooler ID: 62201 @ 9.9 °C Therm ID: 242 |
| | | Cooler ID: @ °C Therm ID: |
| | | Cooler ID: @ °C Therm ID: |
| | | Cooler ID: @ °C Therm ID: |
| | | Cooler ID: @ °C Therm ID: |
| *If >6°C, were samples collected <8 hours ago?* | Y | |
| If <0°C, were sample containers ice free? | | |
| If samples received without a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "**COOLER TEMP**" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled". | | |
| Note: Identify containers received at non-compliant temperature . Use form FS-0029 if more space is needed. | | |
| | | Note: Refer to form F-083 "Sample Guide" for hold times. |
| Were samples received within hold time? | Y | |
| Do samples **match COC**** (i.e.,sample IDs,dates/times collected)? | N | |
| **Note: If times differ <1hr, record details & login per COC. | | Rinsate samples not listed on the COC. Added by JAN. |
| Were analyses requested unambiguous? | Y | |
| | | ☐ ***Exemption permitted for metals (e.g.200.8/6020A). |
| Were proper containers (type/mass/volume/preservative***)used? | Y | |
| ***IF APPLICABLE*** | | |
| Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? | Y | |
| Were all VOA vials free of headspace (i.e., bubbles ≤ 6mm)? | N | Container 4F had a bubble > 6mm |
| Were all soil VOAs field extracted with MeOH+BFB? | | |

**Note to Client:** Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.

Additional notes (if applicable):

## Sample Containers and Preservatives

| Container Id | Preservative | Container Condition | Container Id | Preservative | Container Condition |
|---|---|---|---|---|---|
| 1163342001-A | HCL to pH < 2 | OK | 1163342006-C | HCL to pH < 2 | OK |
| 1163342001-B | HCL to pH < 2 | OK | 1163342006-D | HCL to pH < 2 | OK |
| 1163342001-C | HCL to pH < 2 | OK | 1163342006-E | HCL to pH < 2 | OK |
| 1163342001-D | HCL to pH < 2 | OK | 1163342006-F | HCL to pH < 2 | OK |
| 1163342001-E | HCL to pH < 2 | OK | 1163342006-G | HCL to pH < 2 | OK |
| 1163342001-F | HCL to pH < 2 | OK | 1163342006-H | HCL to pH < 2 | OK |
| 1163342001-G | HCL to pH < 2 | OK | 1163342007-A | HCL to pH < 2 | OK |
| 1163342001-H | HCL to pH < 2 | OK | 1163342007-B | HCL to pH < 2 | OK |
| 1163342002-A | HCL to pH < 2 | OK | 1163342007-C | HCL to pH < 2 | OK |
| 1163342002-B | HCL to pH < 2 | OK | 1163342007-D | HCL to pH < 2 | OK |
| 1163342002-C | HCL to pH < 2 | OK | 1163342007-E | HCL to pH < 2 | OK |
| 1163342002-D | HCL to pH < 2 | OK | 1163342007-F | HCL to pH < 2 | OK |
| 1163342002-E | HCL to pH < 2 | OK | 1163342007-G | HCL to pH < 2 | OK |
| 1163342002-F | HCL to pH < 2 | OK | 1163342007-H | HCL to pH < 2 | OK |
| 1163342002-G | HCL to pH < 2 | OK | 1163342008-A | HCL to pH < 2 | OK |
| 1163342002-H | HCL to pH < 2 | OK | 1163342008-B | HCL to pH < 2 | OK |
| 1163342003-A | HCL to pH < 2 | OK | 1163342008-C | HCL to pH < 2 | OK |
| 1163342003-B | HCL to pH < 2 | OK | 1163342008-D | HCL to pH < 2 | OK |
| 1163342003-C | HCL to pH < 2 | OK | 1163342008-E | HCL to pH < 2 | OK |
| 1163342003-D | HCL to pH < 2 | OK | 1163342008-F | HCL to pH < 2 | OK |
| 1163342003-E | HCL to pH < 2 | OK | 1163342008-G | HCL to pH < 2 | OK |
| 1163342003-F | HCL to pH < 2 | OK | 1163342008-H | HCL to pH < 2 | OK |
| 1163342003-G | HCL to pH < 2 | OK | 1163342009-A | HCL to pH < 2 | OK |
| 1163342003-H | HCL to pH < 2 | OK | 1163342009-B | HCL to pH < 2 | OK |
| 1163342004-A | HCL to pH < 2 | OK | 1163342009-C | HCL to pH < 2 | OK |
| 1163342004-B | HCL to pH < 2 | OK | | | |
| 1163342004-C | HCL to pH < 2 | OK | | | |
| 1163342004-D | HCL to pH < 2 | OK | | | |
| 1163342004-E | HCL to pH < 2 | OK | | | |
| 1163342004-F | HCL to pH < 2 | OK | | | |
| 1163342004-G | HCL to pH < 2 | OK | | | |
| 1163342004-H | HCL to pH < 2 | OK | | | |
| 1163342005-A | HCL to pH < 2 | OK | | | |
| 1163342005-B | HCL to pH < 2 | OK | | | |
| 1163342005-C | HCL to pH < 2 | OK | | | |
| 1163342005-D | HCL to pH < 2 | OK | | | |
| 1163342005-E | HCL to pH < 2 | OK | | | |
| 1163342005-F | HCL to pH < 2 | OK | | | |
| 1163342005-G | HCL to pH < 2 | OK | | | |
| 1163342005-H | HCL to pH < 2 | OK | | | |
| 1163342006-A | HCL to pH < 2 | OK | | | |
| 1163342006-B | HCL to pH < 2 | OK | | | |

| Container Id | Preservative | Container Condition | Container Id | Preservative | Container Condition |
|---|---|---|---|---|---|

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.
BU - The container was received with headspace greater than 6mm.
DM- The container was received damaged.
FR- The container was received frozen and not usable for Bacteria or BOD analyses.
PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.
PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

**APPENDIX B**

**LABORATORY CHECKLIST**

# Laboratory Data Review Checklist

Completed by: Mike Boese

Title: Chemist Date: 8/2/2016

CS Report Name: Former Mammoth Trucking Report Report Date: 7/8/2016

Consultant Firm: Fairbanks Environmental Services

Laboratory Name: SGS Laboratory Report Number: 1155864

ADEC File Number: 2100.26.202 ADEC RecKey Number: 23887

1. Laboratory
   a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?
      ●Yes No NA (Please explain.) Comments:

   b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?
      Yes No ●NA (Please explain.) Comments:

      No samples were transferred.

2. Chain of Custody (COC)
   a. COC information completed, signed, and dated (including released/received by)?
      ●Yes No NA (Please explain.) Comments:

      However, the equipment blank (rinsate) was inadvertently no included on the COC form. The sample jars were provided and SGS added the sample to the COC form and analyzed the rinsate sample within holding time. There was no adverse impact to data quality.

   b. Correct analyses requested?
      ●Yes No NA (Please explain.) Comments:

3. Laboratory Sample Receipt Documentation
   a. Sample/cooler temperature documented and within range at receipt (4° ± 2° C)?
      Yes ● No NA (Please explain.) Comments:

      The temperature blank was 9.9° C upon arrival at the laboratory. Note that the gel ice in the cooler was frozen and that the groundwater samples were hand delivered on the same day the samples were collected. Since the samples were relinquished to project laboratory within 1 to 7 hours of collection, impact to data quality was minor and no data were qualified.

b. Sample preservation acceptable – acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

●Yes No NA (Please explain.) Comments:

c. Sample condition documented – broken, leaking (Methanol), zero headspace (VOC vials)?

●Yes No NA (Please explain.) Comments:

Samples were reportedly in good condition.

d. If there were any discrepancies, were they documented? For example, incorrect sample containers/preservation, sample temperature outside of acceptable range, insufficient or missing samples, etc.?

●Yes No NA (Please explain.) Comments:

The temperature discrepancy was discussed above in 3a. In addition, the inadvertent exclusion of the equipment blank sample from the COC form was discussed above in 2a.

e. Data quality or usability affected? (Please explain.)

Comments:

See discussion in Section 2a and 3a.

4. Case Narrative

a. Present and understandable?

●Yes No NA (Please explain.) Comments:

b. Discrepancies, errors or QC failures identified by the lab?

Yes ● No NA (Please explain.) Comments:

No errors associated with this sample data group were identified.

c. Were all corrective actions documented?

Yes No ●NA (Please explain.) Comments:

No errors were identified, so no need for corrective actions.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

Case narrative does not discuss data quality, it typically only lists anomalies and outliers.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

●Yes No NA (Please explain.) Comments:

b. All applicable holding times met?

●Yes No NA (Please explain.) Comments:

c. All soils reported on a dry weight basis?

Yes No ●NA (Please explain.) Comments:

All samples associated with this sample data group were water matrix.

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

Yes ● No NA (Please explain.) Comments:

Although they were not detected in project samples, the LODs of two VOC analytes (1,2-dibromoethane and 1,2,3-trichloropropane) were reported in excess of the groundwater cleanup levels. Consequently, these data have limited usefulness. The analytes do not appear to be site chemicals of concern, however.

e. Data quality or usability affected?

Comments:

Not applicable. See comments above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

●Yes No NA (Please explain.) Comments:

ii. All method blank results less than PQL?

●Yes No NA (Please explain.) Comments:

iii. If above PQL, what samples are affected?

Comments:

Not applicable.

iv. Do the affected sample(s) have data flags and if so, are the data flags clearly defined?

Yes No ●NA (Please explain.) Comments:

No method blank detections were identified, so no data flags were applied.

v. Data quality or usability affected? (Please explain.)

Comments:

There was no impact to data quality; all method blank results were non detect.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics – One LCS/LCSD reported per matrix, analysis and 20 samples? (LCS/LCSD required per AK methods, LCS required per SW846)

●Yes No NA (Please explain.) Comments:

ii. Metals/Inorganics – one LCS and one sample duplicate reported per matrix, analysis and 20 samples?

Yes No ●NA (Please explain.) Comments:

There were no metals/inorganics analyses associated with this sample data group.

iii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

●Yes No NA (Please explain.) Comments:

iv. Precision – All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/MSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

●Yes No NA (Please explain.) Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

Not applicable.

vi. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

Yes No ●NA (Please explain.) Comments:

All LCS precision and accuracy criteria were acceptable.

vii. Data quality or usability affected? (Use comment box to explain.)

Comments:

There was no impact to data quality. All LCS/LCSD recoveries and RPD were acceptable.

c. Surrogates – Organics Only

i. Are surrogate recoveries reported for organic analyses – field, QC and laboratory samples?

●Yes No NA (Please explain.) Comments:

ii. Accuracy – All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

●Yes No NA (Please explain.) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

Yes No ●NA (Please explain.) Comments:

No samples results had failed surrogate recoveries.

iv. Data quality or usability affected? (Use the comment box to explain.)

Comments:

Data were not affected. All surrogates were recovered within control limits.

d. Trip blank – Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

●Yes No NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

●Yes No NA (Please explain.) Comments:

iii. All results less than PQL?

●Yes No NA (Please explain.) Comments:

iv. If above PQL, what samples are affected?

Comments:

Not applicable.

v. Data quality or usability affected? (Please explain.)

Comments:

No analytes were detected in the Trip blank, and data quality was not impacted.

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

●Yes No NA (Please explain.) Comments:

| |
|---|
| WATER: Sample MWX was a field duplicate of CHMWE1. |

ii. Submitted blind to lab?

●Yes No NA (Please explain.) Comments:

| |
|---|
| |

iii. Precision – All relative percent differences (RPD) less than specified DQOs? (Recommended: 30% water, 50% soil)

RPD (%) = Absolute value of: $\frac{(R_1-R_2)}{((R_1+R_2)/2)} \times 100$

Where $R_1$ = Sample Concentration

$R_2$ = Field Duplicate Concentration

Yes ●No NA (Please explain.) Comments:

| |
|---|
| The field duplicate RPD met the 30% criterion for all analytes. Note that RRO was detected in field duplicate sample MWX but not in primary sample CHMWE1. The LOD for the non detect RRO result in sample CHMWE1 was used for calculating the RPD for this analyte. |

iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

Comments:

| |
|---|
| The field duplicate results were comparable and no data were affected or qualified. |

f. Decontamination or Equipment Blank (If not used explain why).

●Yes No NA (Please explain.) Comments:

| |
|---|
| An equipment blank was collected from the decontaminated submersible pump following the collection of sample CHMWE1. |

i. All results less than PQL?

●Yes No NA (Please explain.) Comments:

| |
|---|
| |

ii. If above PQL, what samples are affected?

Comments:

| |
|---|
| Not applicable since all equipment blank results were non detected. |

iii. Data quality or usability affected? (Please explain.)

Comments:

| |
|---|
| No data were affected. Equipment blank results were non detect. |

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)
   a. Defined and appropriate?
      ●Yes No NA (Please explain.) Comments:

| |
|---|
| Results reported below the limit of quantitation (LOQ) were qualified with a J flag to indicate they are estimated values. |

**APPENDIX C**

**WASTE MANIFEST AND DISPOSAL CERTIFICATE**

*** IN CASE OF EMERGENCY CALL 1-800-899-4672 ***

# NON-HAZARDOUS WASTE MANIFEST

104856 (LV)

Please print or type (Form designed for use on elite (12 pitch) typewriter)

**NON-HAZARDOUS WASTE MANIFEST**

1. Generator's US EPA ID No.: EXEMPT

Manifest Document No.: 104856A

2. Page 1 of 1

3. Generator's Name and Mailing Address
FAIRBANKS ENVIRONMENTAL SERVICES
2400 SPENARD ROAD #300
ANCHORAGE, AK 99503

MAMMOTH TRUCKING
1048 E. WHITNEY ROAD
ANCHORAGE, AK 99501

4. Generator's Phone ( (907) 277-7111

5. Transporter 1 Company Name: CLIENT DELIVERED

6. US EPA ID Number:

A. State Transporter's ID:

B. Transporter 1 Phone:

7. Transporter 2 Company Name:

8. US EPA ID Number:

C. State Transporter's ID:

D. Transporter 2 Phone:

9. Designated Facility Name and Site Address
NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

10. US EPA ID Number: AKR000004184

E. State Facility's ID:

F. Facility's Phone: (907) 258-1558

| 11. WASTE DESCRIPTION | Containers No. | Containers Type | 13. Total Quantity | 14. Unit Wt./Vol. |
|---|---|---|---|---|
| HM | | | | |
| a. Material Not Regulated by DOT | 1 | DF | 240 | P |
| b. | | | | |
| c. | | | | |
| d. | | | | |

GENERATOR

12. Additional Descriptions for Materials Listed Above: EA0302 - IDW-DECON WATER/GROUNDWATER

H. Handling Codes for Wastes Listed Above: D3138

15. Special Handling Instructions and Additional Information

Shipper's Certification: This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation

NON-HAZARDOUS WASTE

16. **GENERATOR'S CERTIFICATION:** I hereby certify that the contents of this shipment are fully and accurately described and are in all respects in proper condition for transport. The materials described on this manifest are not subject to federal hazardous waste regulations.

Printed/Typed Name: ⊗ MICHAEL L. BOESE — Signature: Michael L Boese — Date: Month 6 Day 23 Year 16

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: ⊗ MICHAEL L. BOESE — Signature: Michael L Boese — Date: Month 6 Day 23 Year 16

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: — Signature: — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of the waste materials covered by this manifest, except as noted in item 19.

Printed/Typed Name: Patricia L. Beasley — Signature: Patricia L Beasley — Date: Month 6 Day 24 Year 16

# Drum Tracking Log for Manifest Number 104856A

| Manifest 104856A | | | Arrived 23-JUN-16 | | | | Gen MAMMOTH TRUCKING | | | Tsdf NRC ALASKA LLC | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Document** | **Item** | **Line** | **Profile** | **Type** | **Size** | **Oil Fuel** | **Water** | **Antifreeze** | **Sludge** | **Solids** | **Location** |
| D3138 | 1 | 1 | EA0302 | DF | 30 | 0 | 30 | 0 | 0 | 0 | WATER: 250.35 P, 30.00 GA |
| | | | | Totals: | | 0 | 30 | 0 | 0 | 0 | |

PLB

# CERTIFICATE OF DISPOSAL/RECYCLE

**GENERATOR:** MAMMOTH TRUCKING
1048 E. WHITNEY ROAD
ANCHORAGE, AK 99501

**DISPOSAL FACILITY:** NRC ALASKA LLC
2020 VIKING DRIVE
ANCHORAGE, AK 99501

**EPA ID NUMBER:** EXEMPT
**MANIFEST/DOCUMENT #:** 104856A
**DATE OF DISPOSAL/RECYCLE:** JUN-23-2016

| LINE | WASTE DESCRIPTION | CONTAINERS | TYPE | QUANTITY | UOM |
|---|---|---|---|---|---|
| 1 | IDW DECON WATER/GROUNDWATER | 1 | DF | 240 | P |

**I certify, on behalf of the above listed treatment facility, that to the best of my knowledge, the above described waste was managed in compliance with all applicable laws, regulations, permits and licenses on the date listed above.**

**PREPARED BY:** PLB

**SIGNATURE:** Patricia Blasley **DATE:** JUN 24 2016