Larson & Associates, Inc.
Environmental Consultants

**INFORMATION ONLY**

February 18, 2016

VIA EMAIL: Tomas.Oberding@state.nm.us

Dr. Tomas Oberding, PhD
Hydrologist, Adv-District 1
Oil Conservation Division, EMNRD
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

**Re: 1RP-3360 – 2015 Semi-Annual (August and December) Groundwater Monitoring Report, Legacy Reserves, L.P., LMPSU Trash Pit, Lea County, New Mexico, February 15, 2016**

Dear Dr. Oberding:
Larson & Associates, Inc. (LAI) submits the above-referenced report on behalf of Legacy Reserves, L.P (Legacy) to present the results of semi-annual (August and December 2015) groundwater monitoring at a former trash pit (Site) located at the Langlie Mattix Penrose Sand Unit (LMPSU) in Lea County, New Mexico. Groundwater samples were collected quarterly from four (4) monitoring wells (MW-1 through MW-4) during August and December 2015. Please contact Mr. Heath Loftin, with Legacy at (432) 689-5200 or me at (432) 687-0901, if you have questions.

Sincerely,

***Larson & Associates, Inc.***

Kimberly Huckaba
Staff Geologist
khuckaba@laenvironmental.com

cc: Jamie Keyes – OCD District 1
Heath Loftin – Legacy
Ernest Barrientez - Legacy

Encl.

# SEMI-ANNUAL
# GROUNDWATER MONITORING REPORT
# (August and December 2015)

Langlie Mattix Penrose Sand Unit Trash Pit
Lea County, New Mexico
1RP-3360

LAI Project No. 14-0107-01

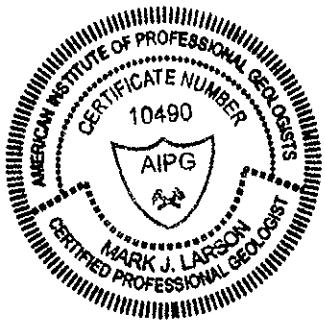
February 15, 2016

Prepared for:

Legacy Reserves, L.P.
30 West Wall Street, Suite 1400
Midland, Texas 79701

Prepared by:

Larson & Associates, Inc.
507 North Marienfeld, Suite 205
Midland, Texas 79701




Kimberly M. Huckaba
Staff Geologist

Mark J. Larson, PG
Certified Professional Geologist #10490
President/Geologist

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# 1.0 EXECUTIVE SUMMARY

This report has been prepared on behalf of Legacy Reserves, L.P. (Legacy) for submittal to the New Mexico Oil Conservation Division (OCD) to present laboratory analysis of 2015 quarterly (August and December) groundwater samples from 4 monitoring wells (MW-1 through MW-4) at a former trash pit located at the Langlie Mattix Penrose Sand Unit (Site) The Site is located in Unit O (SW/4, SE/4), Section 27, Township 22 South, Range 37 East, in Lea County, New Mexico. The geodetic position is north 32° 21' 28.40" and west 103° 8' 50.07".

The following activities occurred during the second half of 2015:

- August 18, 2015 - Third Quarter Gauging and Groundwater Sampling Event
- December 3, 2015 - Fourth Quarter Gauging and Groundwater Sampling Event

The following observations are documented in this report:

- BTEX was below the analytical method reporting limit (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards during August and December 2015;
- Chloride exceeded the WQCC domestic water quality standard (250 mg/L) in MW-1 and MW-3 during August and December 2015;
- TDS exceeded the WQCC domestic water quality standard (1,000 mg/L) in MW-1 and MW-3 during August and in MW-1, MW-3, and MW-4 in December 2015;
- The source for chloride and TDS in well MW-1 is a historic disposal pit that was excavated during trash pit remediation.

Legacy will continue groundwater monitoring on a quarterly (4 times per year) schedule through 2016 or as directed by the OCD. Notification will be provided to the OCD at least 48 hours prior to each monitoring event, and as soon as possible upon any significant change in analyte concentrations.

# 2.0 INTRODUCTON

This semi-annual report is submitted to the New Mexico Oil Conservation Division (NMOCD) on behalf of Legacy Reserves, L.P. (Legacy) by Larson & Associates, Inc. (LAI) to present quarterly (4 times per year) groundwater monitoring results for a closed trash pit at the Langlie Mattix Penrose Sand Unit (Site). This report is for groundwater sampling performed during August and December 2015. The Site is located in Unit O (SW4/SE4), Section 27, Township 22 South, Range 37 East, in Lea County, New Mexico. The geodetic position is north 32° 21' 28.40" and west 103° 8' 50.07". Figure 1 presents a topographic map. Figure 2 presents an aerial map. Figure 3 presents a site drawing.

## *2.1 Background*

On May 16, 2011, OCD issued a letter to current and past operators of the Site that referenced a complaint from a nearby landowner that burial of miscellaneous refuse and debris occurred at the Site. Appendix A presents the OCD correspondence.

Legacy, as current operator, retained Etech Environmental & Safety Solutions, Inc. (Etech) to investigate the Site. Etech used a metal detector to identify locations where metallic waste may have been buried and excavated five (5) locations to a maximum depth of about 20 feet below ground surface (BGS). Waste and debris was excavated and segregated from soil. The waste was disposed at a permitted facility and about 7,500 to 9,000 cubic yards of soil was retained on the Site.

In 2013, Etech installed a monitoring well (MW-1) about 50 feet southwest of the Site. The monitoring well was drilled to about 64 feet bgs. Groundwater was gauged at about 42 feet bgs. No construction documentation is available for the well.

In March 2014, Legacy retained LAI to resume the investigation and closure of the excavations. On April 9, 2014, LAI personnel sampled the excavation. The samples were analyzed to determine the concentration of total petroleum hydrocarbons (TPH) and chloride. The laboratory reported TPH concentration above the OCD recommended remediation action level (RRAL) of 100 parts per million (ppm). The vertical and lateral extent of TPH impact and chloride was determined from 15 soil borings that were drilled at the Site. Chloride was about 250 mg/Kg in the deepest samples at nine (9) boring locations. Approximately 1,630 cubic yards of soil was disposed at Sundance Services, located east of Eunice, New Mexico. On August 1, 2014, the OCD District 1 approved closing the excavations by placing a 20 mil thickness liner in the bottom at least 4 feet BGS and backfilling with soil from the stockpiles. Excavation closure was completed on August 30, 2014.

On April 11, 2014, LAI personnel collected a groundwater sample from well MW-1 located near the southwest corner of the Site. The sample was analyzed for BTEX, cations (calcium, magnesium, sodium and potassium), anions (alkalinity, sulfate and chloride), nitrate and total dissolved solids (TDS). The BTEX concentrations were below the method detection limits (MDL) and New Mexico Water Quality

Control Commission (WQCC) human health standards. Chloride and TDS were reported at 1,480 milligrams per liter (mg/L) and 3,510 mg/L, respectively. On June 12, 2014, under LAI supervision, a monitoring well, MW-2, was installed about 275 feet north (up gradient) of the Site. On June 13, 2014, LAI personnel collected groundwater samples from wells MW-1 and MW-2. The chloride and TDS in the up gradient well (MW-2) was 58.8 mg/L and 1,000 mg/L, respectively. Chloride and TDS were 2,720 mg/L and 6,700 mg/L, respectively, in the down gradient well (MW-1). The laboratory results confirmed that a release to groundwater had occurred.

On July 1, 2014, Legacy purchased the tract of land (approximately 40 acres) that includes the trash and disposal pits. Legacy requested LAI investigate the groundwater impact. A report was submitted to OCD on September 22, 2014 titled *Excavation Closure Report and Groundwater Investigation Plan.* The OCD issued the remediation project number 1RP-3360.

## *2.2 Setting*

### 2.2.1 Topography

The Site is located about 5.5 miles southeast of Eunice, in rural Lea County, New Mexico. The surface elevation is approximately 3,315 feet above mean sea level (MSL) and slopes gently to the southeast. The nearest surface water is the ephemeral Monument Draw, which is located about 1.5 miles east of the Site. There are no apparent surface connection for runoff between the Site and Monument Draw.

### 2.2.2 Geology

Surface soils are gently undulating and well drained. The Natural Resource Conservation Service Soil Survey for Lea County identifies the surface soil underlaying the site as Pyote-Maljamar-Kermit association. Boring logs consist of brown-yellow red sandy clays of medium to fine grained.

The surface geology is comprised of recent-age eolian to Pleistocene-age alluvium derived mostly from reworking the underlying Tertiary-aged Blackwater Draw and Ogallala formations, in descending order. The Blackwater Draw formation is comprised mainly of fine grained wind-blown sand derived from the underlying Ogallala formation. The Ogallala formation consists of fluvial sand, silt, clay and localized gravel, with indistinct to massive cross beds. The Ogallala sand is generally fine- to medium-grained quartz. The lithology consists of unconsolidated eolian sand over a unit of carbonate-indurated sand commonly referred to as “caliche”. Caliche was encountered in many of the borings drilled at the Site and ranged between about 5 and 25 feet thick, depending on location. Beneath the caliche unit is a thickness of fine-grained pink quartz sand. Locally this sand is lithified into sandstone with clayey sand or red-bed clay. The Ogallala formation is underlain by the Triassic-age Chinle formation of the Dockum group which is comprised of interbedded sand, clay and mudstone.

### 2.2.3 Groundwater

Groundwater occurs in the Ogallala formation at approximately 42 feet BGS. The Dockum Group is the lower confining unit for the Ogallala aquifer and occurs at about 60 feet BGS. The saturated thickness of the Ogallala formation (aquifer) is approximately 20 feet. Monitoring wells were gauged for depth to

groundwater on August 18, 2015 and December 3, 2015 Figure 3 presents the monitoring well locations. Figure 6 presents an aquifer thickness map.

On August 18, 2015, groundwater ranged from 3,277.49 feet ASML in MW-1 (down-gradient) to 3,280.43 feet AMSL in MW-2 (up-gradient). The groundwater flow direction was from southwest to northeast at a gradient of approximately 0.11 feet per foot. Groundwater flow direction corresponds with regional groundwater flow direction. Table 1 presents a summary of the depth to groundwater measurements. Figure 4a presents the groundwater potentiometric map for August 18, 2015.

On December 3, 2015, groundwater ranged from 3,280.39 feet ASML in MW-4 (cross-gradient) to 3,281.54 feet AMSL in MW-1 (up-gradient). Groundwater flow direction was not consistent with August 18, 2015 and appears to flow from south to north. This data suggests a possible recording error for well MW-1. Figure 4b presents the groundwater potentiometric map for December 3, 2015.

# 3.0 GROUNDWATER MONITORING

## *3.1 Groundwater Samples and Laboratory Analysis*

Groundwater samples were collected from four (4) monitoring wells (MW-1 through MW-4) during the third and fourth quarter monitoring events on August 18, 2015 and December 3, 2015. The groundwater samples were collected after removing approximately three (3) well volumes of groundwater by purging dry with dedicated disposable polyethylene bailers or pumping with an electric submersible pump and dedicated tubing. The samples were carefully transferred to laboratory containers that were labeled, sealed with custody labels, packed in an ice filled chest and delivered under chain of custody control to DHL Analytical, Inc. (DHL), a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory, located in Round Rock, Texas. Samples for cations were filtered by the laboratory to exclude particles larger than 0.45µ and acidified with nitric acid within 24-hours of collection. DHL analyzed the samples for benzene, toluene, ethylbenzene, xylene (BTEX) by EPA SW 846 method 8021B, cations (calcium, magnesium, sodium and potassium) by EPA method S-6010C, anions (alkalinity, sulfate and chloride) by standard methods 2320B and E300, nitrate (E300) and total dissolved solids (TDS) by standard method 2540C . Purge water was contained in a portable tank and discharged to the Facility's process water system for disposal in an offsite OCD permitted Class II injection well. Table 2 presents the laboratory analysis summary for organic and inorganic parameters. Appendix A presents the laboratory reports.

### 3.1.1 BTEX Analytical Results

All BTEX values were below the analytical method reporting limit (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards during 2015. The results are consistent with previous monitoring events.

### 3.1.2 General Chemistry Analytical Results

Groundwater samples were analyzed for general chemistry parameters cations (calcium, magnesium, potassium and calcium), anions (alkalinity, chloride and sulfate), nitrate and TDS. Table 2 presents the cation, anion, nitrate and TDS analytical data summary.

Referring to Table 2, the laboratory reported chloride above the WQCC domestic water quality standard of 250 milligrams per liter (mg/L) in MW-1 (1,600 mg/L) and MW-3 (405 mg/L) on August 18, 2015. The laboratory reported TDS in excess of the WQCC domestic water quality standard of 1,000 mg/L in samples from monitoring wells MW-1 (3,830 mg/L) and MW-3 (1,380 mg/L). The results for MW-1 are consistent with previous monitoring events with no apparent increase or decrease in concentration. Figure 5a presents an isopleth drawing for chloride concentration in the groundwater on August 18, 2015. Figure 6a presents an isopleth drawing for the TDS concentration in groundwater on August 18, 2015.

On December 3, 2015, chloride and TDS exceeded the WQCC domestic water quality standards of 250 mg/L and 1,000 mg/L, respectively, in MW-1 and MW-3. TDS exceeded the WQCC domestic water quality standard in MW-4. The laboratory reported chloride at 1,820 mg/L in MW-1 and 350 mg/L in MW-3. The laboratory reported TDS in excess of the WQCC domestic water quality standard in samples from monitoring wells MW-1 (4,230 mg/L), MW-3 (1,260 mg/L), and MW-4 (1,050 mg/L). The results for MW-1 and MW-3 are consistent with the previous monitoring events with no apparent increasing or decreasing concentrations. Figure 5b presents an isopleth drawing for chloride concentrations in groundwater on December 3, 2015. Figure 6b presents an isopleth drawing for the TDS concentrations in groundwater on December 3, 2015.

## 4.0 CONCLUSIONS

The following observations are documented in this report:

- BTEX was below the analytical method reporting limit (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards during 2015 and is consistent with previous sampling events;
- Chloride exceeded the WQCC domestic water quality standard (250 mg/L) in samples from MW-1 and MW-3 during 2015 and is consistent with previous sampling events;
- TDS exceeded the WQCC domestic water quality standard (1,000 mg/L) in MW-1 and MW-3 during 2015 and is consistent with previous sampling events;
- TDS was reported above the WQCC domestic water quality standard in well MW-4 on December 3, 2015 (1,050 mg/L) and represents a slight increase over the previous sampling event (974 mg/L) on August 18, 2015;
- Chloride and TDS in well MW-1 are likely from a historic disposal pit located north of of the well that was excavated during closure of the trash pit.

## 5.0 RECOMMENDATIONS

Legacy will continue to monitor groundwater on a quarterly (4 times per year) schedule. Depth to groundwater and groundwater samples will be collected during each event. The samples will be collected as stated earlier and analyzed for BTEX, cations (calcium, magnesium, sodium and potassium), anions (sulfate, chloride, and alkalinity), nitrate and TDS. The groundwater sample results will be submitted to the OCD in semi-annual (twice yearly) reports. Notice will be provided to the OCD in Hobbs and Santa Fe, New Mexico, at least 48 hours prior to each event. The OCD will be notified immediately upon receipt of laboratory analysis of any significant increases in analyte concentrations.

**TABLES**

**Table 1**
**Monitoring Well Drilling and Completion Summary**
**Legacy Reserves, L.P., LMPSU Trash Pit**
**Unit O (SW/4, SE/4), Section 27, Township 22 South, Range 37 East**
**Lea County, New Mexico**

| Well Information | | | | | | | | | Groundwater Data | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Well | Date Installed | Drilled Depth (bgs) | Well Depth from TOC | Well Diameter (inches) | Surface Elevation | Screen Interval (bgs) | Casing Stickup | TOC Elevation | Date Gauged | Depth to Water (TOC) | Depth to Water (BGS) | Groundwater Elevation (Feet) |
| MW-1 | -- | -- | 63.69 | 2 | 3,321.1 | -- | 2.86 | 3324.09 | 04/02/2014 | 44.35 | 41.49 | 3,279.74 |
| | | | | | | | | | 06/13/2014 | 43.38 | 40.52 | 3,280.71 |
| | | | | | | | | | 1/28/2015 | 43.79 | 40.93 | 3,280.30 |
| | | | | | | | | | 6/1/2015 | 43.69 | 40.83 | 3,280.40 |
| | | | | | | | | | 8/18/2015 | 46.6 | 43.74 | 3,277.49 |
| | | | | | | | | | 9/11/2015 | 43.6 | 40.74 | 3,280.49 |
| | | | | | | | | | 12/3/2015 | 42.55 | 39.69 | 3,281.54 |
| MW-2 | 6/12/2014 | 58.00 | 60.50 | 2 | 3322.9 | 38.17 - 57.77 | 2.16 | 3,325.18 | 06/12/2014 | 45.30 | 43.14 | 3,279.88 |
| | | | | | | | | | 06/13/2014 | 45.27 | 43.11 | 3,279.91 |
| | | | | | | | | | 1/28/2015 | 43.79 | 41.63 | 3,281.39 |
| | | | | | | | | | 6/1/2015 | 49.88 | 47.72 | 3,275.30 |
| | | | | | | | | | 8/18/2015 | 44.75 | 42.59 | 3,280.43 |
| | | | | | | | | | 9/11/2015 | 44.50 | 42.34 | 3,280.68 |
| | | | | | | | | | 12/3/2015 | 44.65 | 42.49 | 3,280.53 |
| MW-3 | 4/15/2015 | 55.00 | 57.83 | 2 | 3322.9 | 34.69 - 54.75 | 2.83 | 3,325.87 | 4/15/2015 | 46.00 | 43.17 | 3,279.87 |
| | | | | | | | | | 6/1/2015 | 45.53 | 42.70 | 3,280.34 |
| | | | | | | | | | 8/18/2015 | 45.42 | 42.59 | 3,280.45 |
| | | | | | | | | | 9/11/2015 | 45.40 | 42.57 | 3,280.47 |
| | | | | | | | | | 12/3/2015 | 45.21 | 42.38 | 3,280.66 |
| MW-4 | 4/15/2015 | 58.00 | 60.00 | 2 | 3320.1 | 38.31 - 57.77 | 2.00 | 3,322.16 | 4/15/2015 | 42.08 | 40.08 | 3,280.08 |
| | | | | | | | | | 6/1/2015 | 42.35 | 40.35 | 3,279.81 |
| | | | | | | | | | 8/18/2015 | 42.20 | 40.20 | 3,279.96 |
| | | | | | | | | | 9/11/2015 | 42.00 | 40.00 | 3,280.16 |
| | | | | | | | | | 12/3/2015 | 41.77 | 39.77 | 3,280.39 |

Note: Drilling and completion details for MW-1 are unknown. Well MW-2 drilled and installed by Scarborough Drilling, Inc., Lamesa, Texas.
BGS: below ground surface
TOC: top of casing

**Table 2**
**Groundwater Analytical Data Summary**
**Legacy Reserves, L.P., LMPSU Trash Pit**
**Unit O (SW/4, SE/4), Section 27, Township 22 South, Range 37 East**
**Lea County, New Mexico**

| | | BTEX | | | | Cations | | | | Anions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample** | **Date** | **Benzene (mg/L)** | **Toluene (mg/L)** | **Ethylbenzene (mg/L)** | **Xylenes (mg/L)** | **Sodium (mg/L)** | **Magnesium (mg/L)** | **Potassium (mg/L)** | **Calcium (mg/L)** | **Sulfate (mg/L)** | **Chloride (mg/L)** | **Alkalinity (mg/L)** | **Nitrate (mg/L)** | **TDS (mg/L)** |
| **WQCC Standard:** | | **0.01** | **0.75** | **0.75** | **0.62** | | | | | **600** | **250** | | **10** | **1,000** |
| **MW-1** | 04/10/2014 | <0.0008 | <0.002 | <0.002 | <0.003 | **840** | **195** | **20.9** | **168** | **509** | **1,480** | **673** | <0.1 | **3,510** |
| | 06/13/2014 | -- | -- | -- | -- | **1,420** | **384** | **29.5** | **447** | **896** | **2,720** | **394** | <0.1 | **6,700** |
| | 12/11/2014 | -- | -- | -- | -- | **913** | **242** | **22.3** | **186** | **543** | **1,600** | **888** | <0.100 | **5,330** |
| | 1/28/2015 | -- | -- | -- | -- | **1,430** | **437** | **32.5** | **610** | **947** | **3,230** | **417** | <0.100 | **6,260** |
| | 6/1/2015 | <0.001 | <0.001 | <0.001 | <0.001 | **950** | **270** | **27.6** | **201** | **446** | **1,560** | **653** | <0.2 | **3,920** |
| | 8/18/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **820** | **224** | **21.5** | **152** | **433** | **1,600** | **723** | <0.10 | **3,830** |
| | 12/3/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **930** | **258** | **22.6** | **310** | **431** | **1,820** | **727** | <0.1 | **4,230** |
| **MW-2** | 06/13/2014 | -- | -- | -- | -- | **114** | **30.6** | **7.86** | **48.2** | **121** | **58.8** | **227** | **1.54** | **564** |
| | 12/11/2014 | -- | -- | -- | -- | **116** | **34.9** | **8.29** | **64.5** | **119** | **71.8** | **361** | **1.42** | **619** |
| | 1/28/2015 | -- | -- | -- | -- | **126** | **36.6** | **7.30** | **91.1** | **112** | **71.3** | **288** | **1.36** | **573** |
| | 6/1/2015 | <0.001 | <0.001 | <0.001 | <0.001 | **117** | **34.6** | <10 | **54.9** | **112** | **57.8** | **281** | **1.63** | **578** |
| | 8/18/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **104** | **32.6** | **6.01** | **118** | **114** | **73.9** | **274** | **1.35** | **583** |
| | 12/3/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **106** | **31.8** | **6.22** | **214** | **112** | **67.0** | **247** | **1.23** | **582** |
| **MW-3** | 6/1/2015 | <0.001 | <0.001 | <0.001 | <0.001 | **324** | **60.5** | **10.7** | **57.6** | **234** | **399** | **290** | **2.19** | **1,180** |
| | 8/18/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **284** | **51.5** | **8.22** | **147** | **239** | **405** | **230** | **1.50** | **1,380** |
| | 12/3/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **284** | **51.9** | **8.48** | **221** | **222** | **350** | **232** | **1.19** | **1,260** |
| **MW-4** | 6/1/2015 | <0.001 | <0.001 | <0.001 | **0.0015** | **186** | **58.6** | **10.1** | **83.0** | **251** | **190** | **236** | **2.34** | **918** |
| | 8/18/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **160** | **52.8** | **8.28** | **70.6** | **251** | **213** | **256** | **1.54** | **974** |
| | 12/3/2015 | <0.0008 | <0.002 | <0.002 | <0.003 | **190** | **54.7** | **8.91** | **93.5** | **239** | **218** | **266** | **1.19** | **1,050** |

Notes: Analysis performed by DHL Analytical, Inc., Round, Rock, Texas
Samples analyzed by EPA method SW-8021B (BTEX), SW-8015M (TPH) and E-300 (chloride)
mg/L: milligrams per liter - equivalent to parts per million (ppm)
**Bold denotes analyte detected**
**Bold and highlighted denotes concentration exceed New Mexico Water Quality Control Commission (WQCC) domestic water quality standard**

**FIGURES**

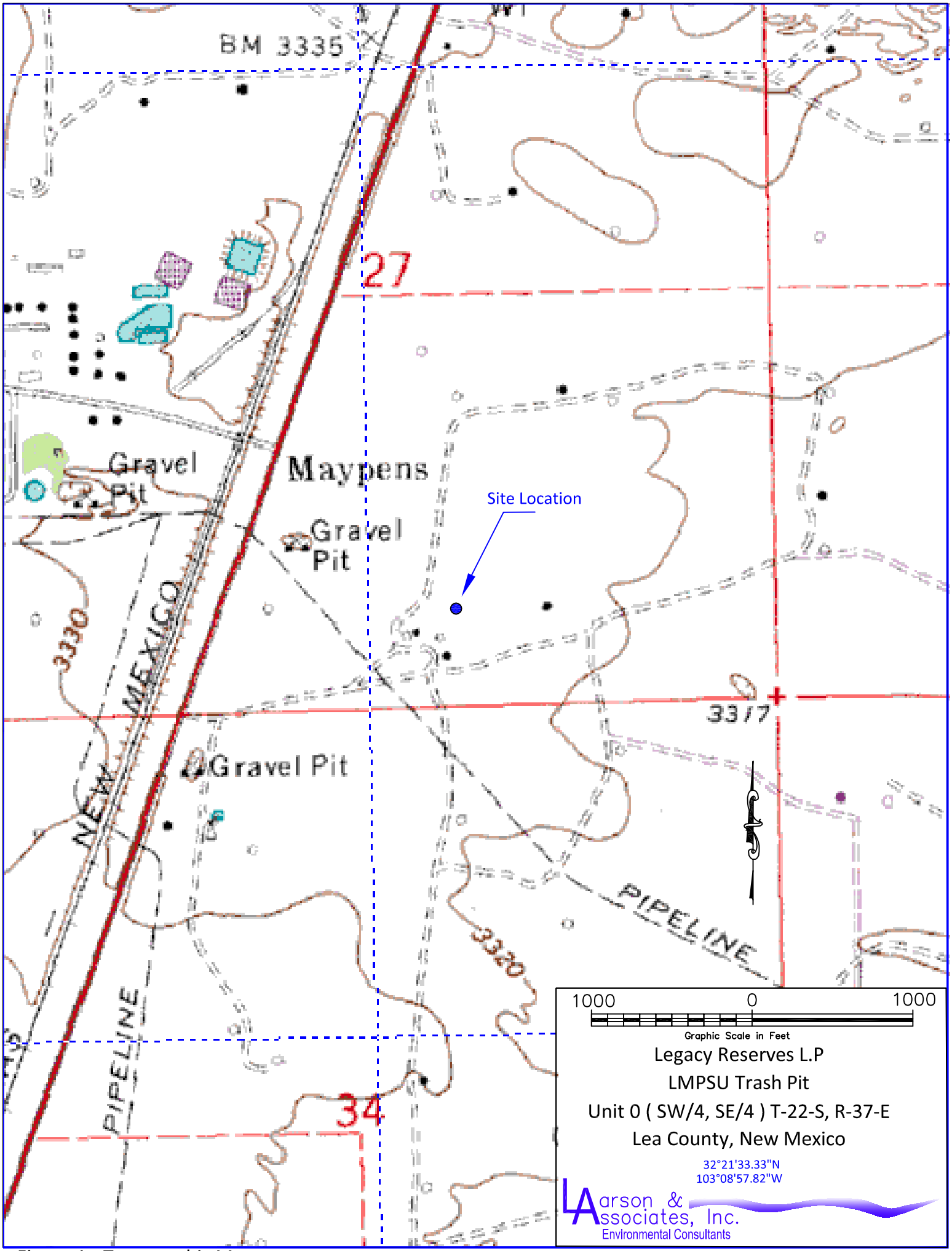



Figure 1 - Topographic Map


Figure 2 - Aerial Map

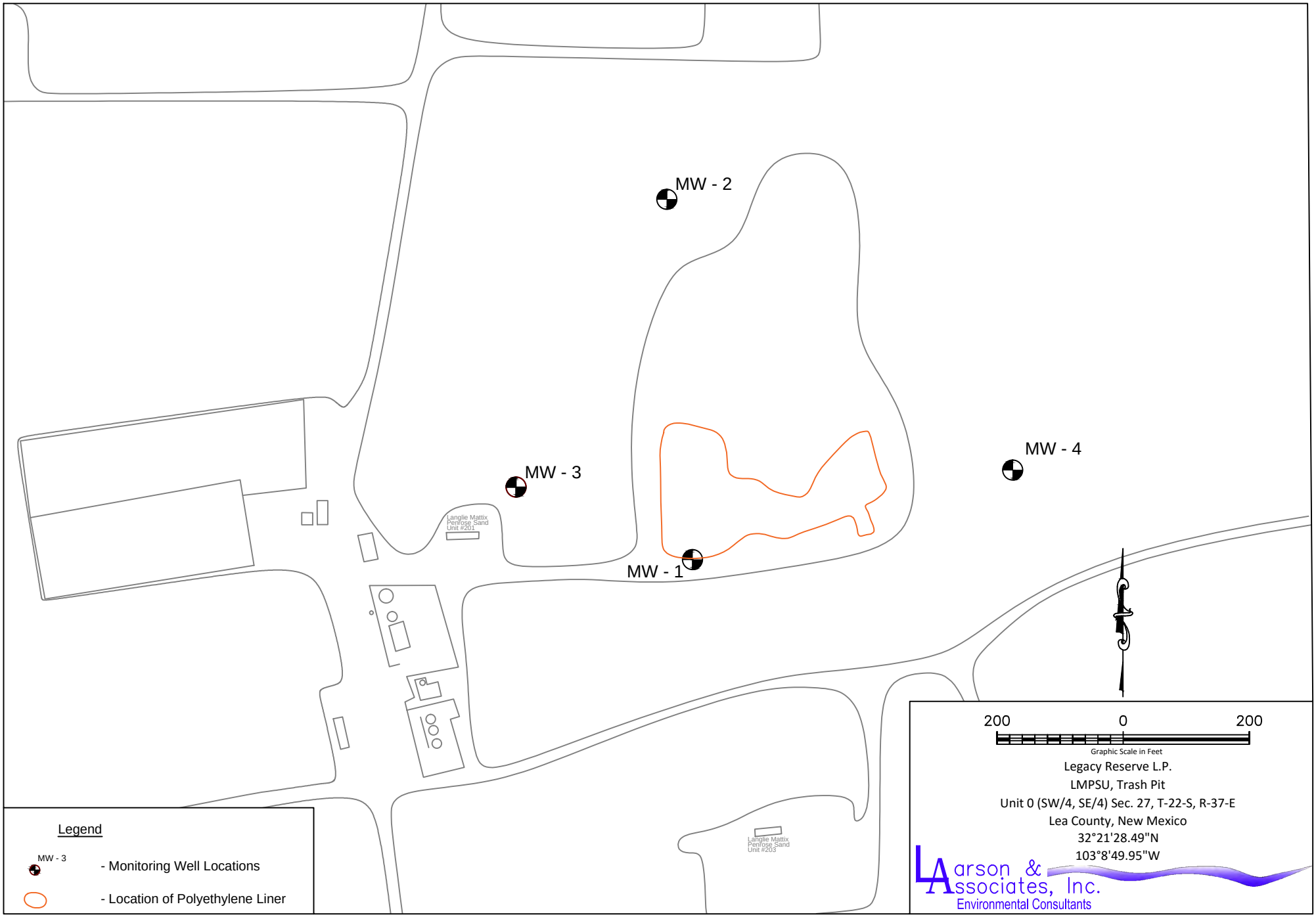



Figure 3 - Site Map

11" x 8.5"

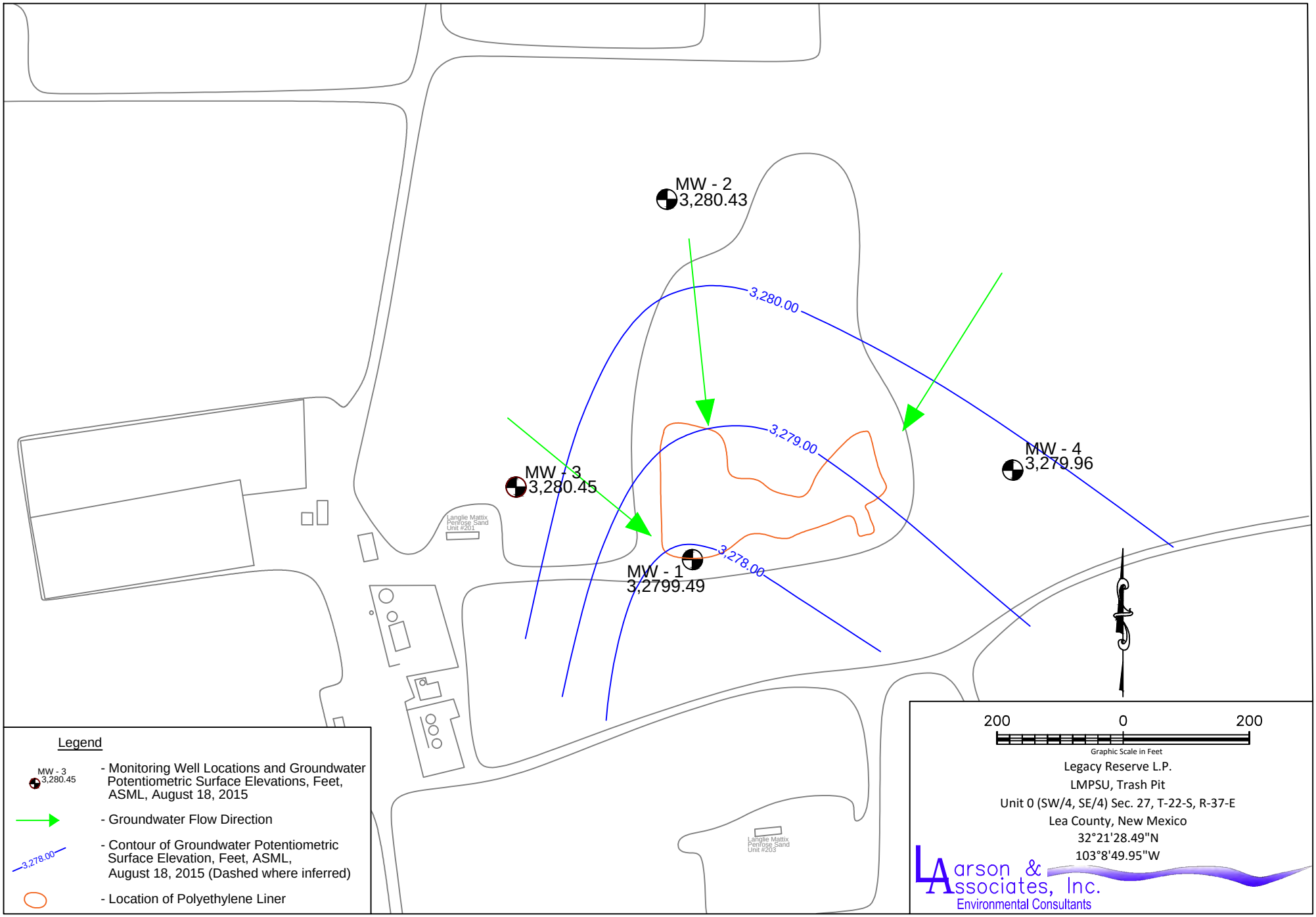



Figure 4a - Groundwater Potentiometric Map, August 18, 2015

11" x 8.5"

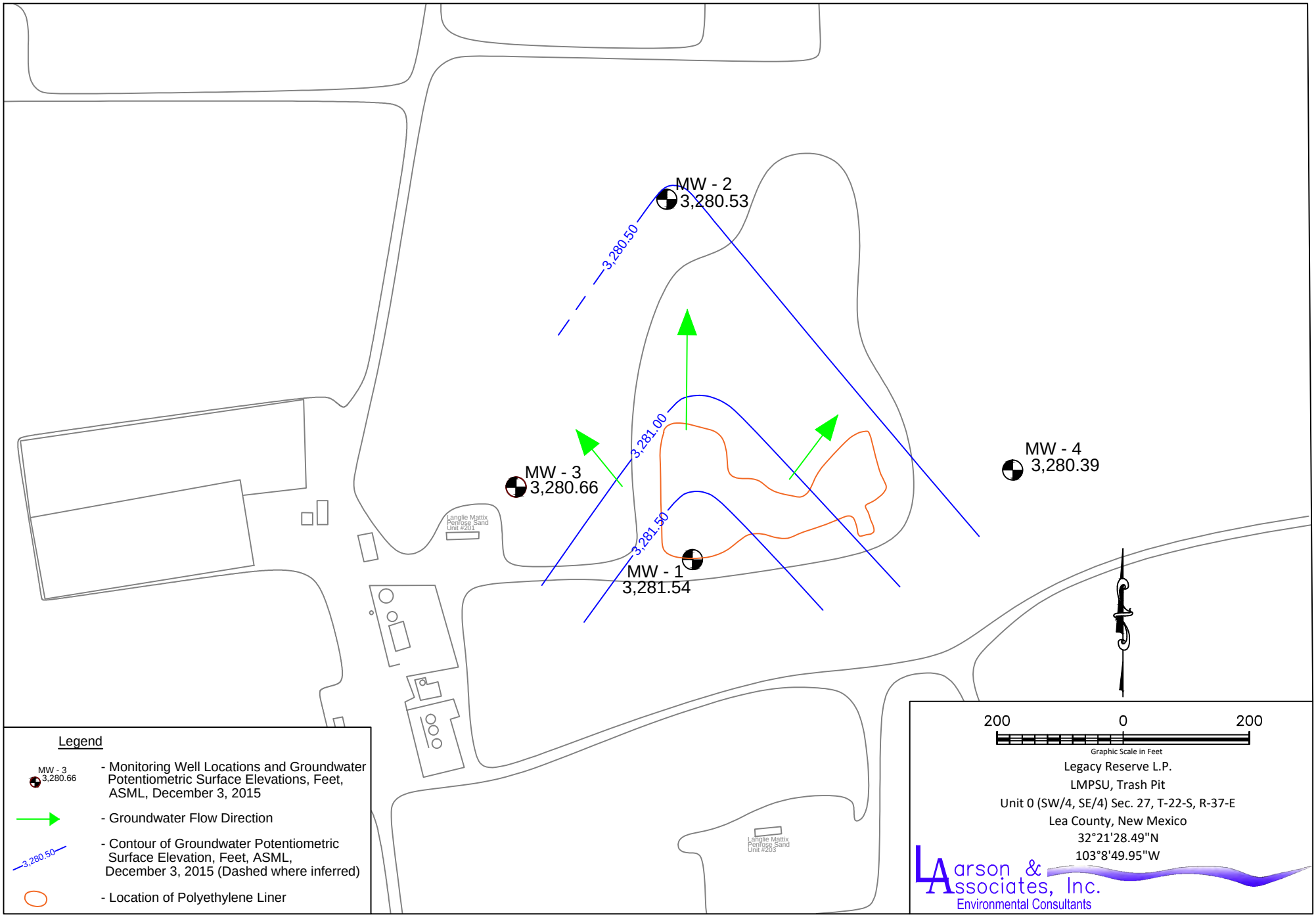



Figure 4b - Groundwater Potentiometric Map, December 3, 2015

11" x 8.5"

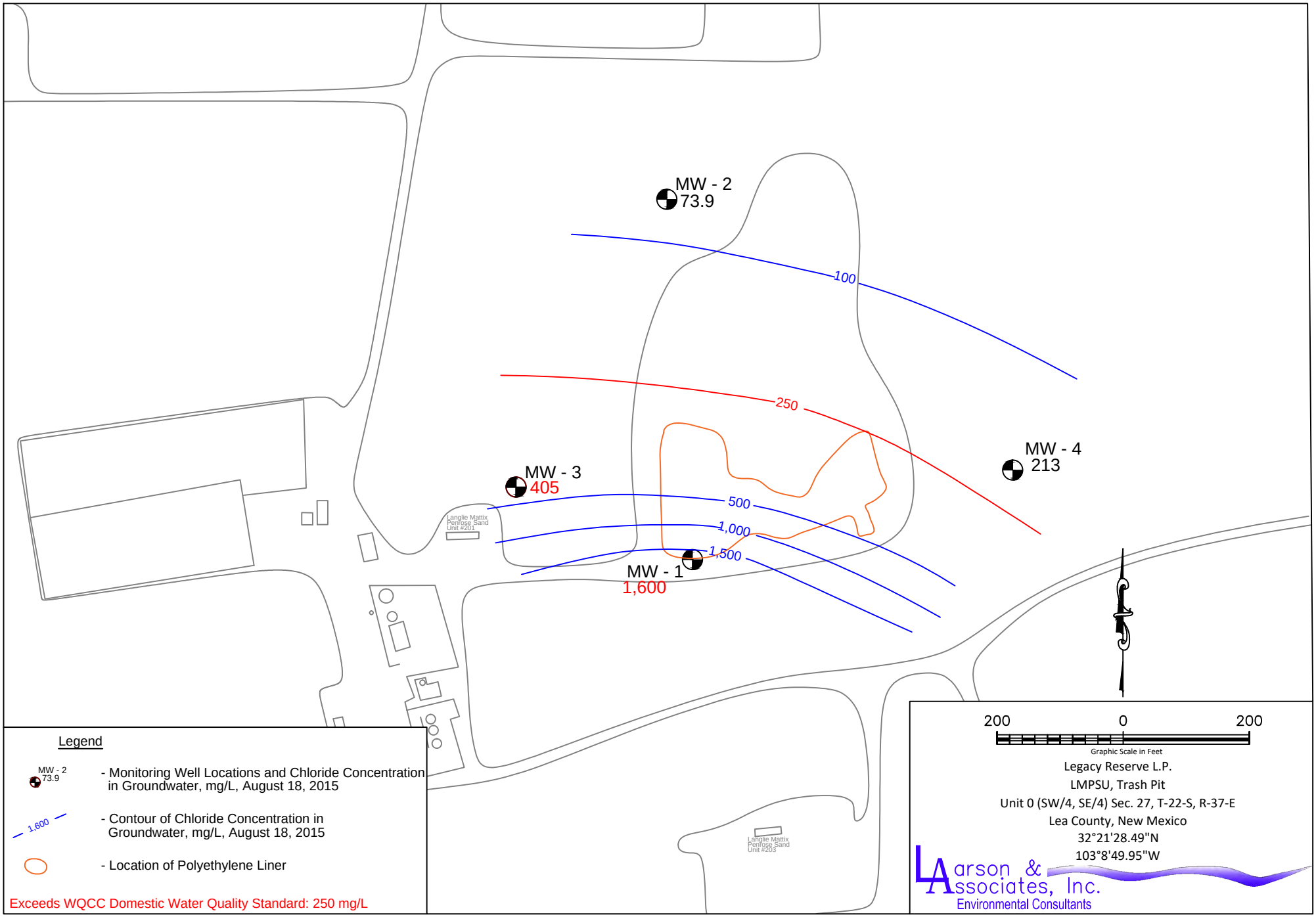



Figure 5a - Chloride Concentration in Groundwater, August 18, 2015

11" x 8.5"

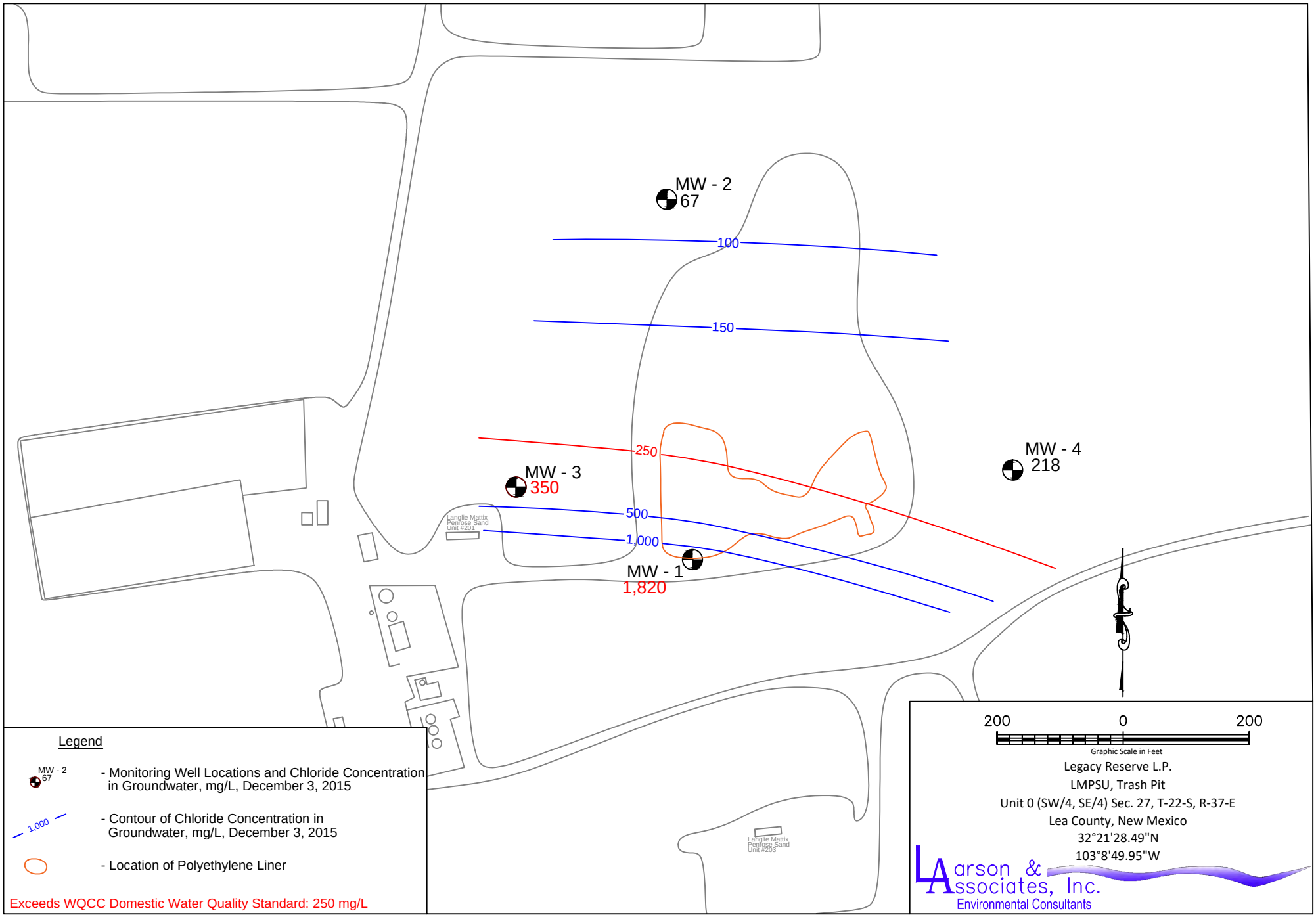



Figure 5b - Chloride Concentration in Groundwater, December 3, 2015

11" x 8.5"

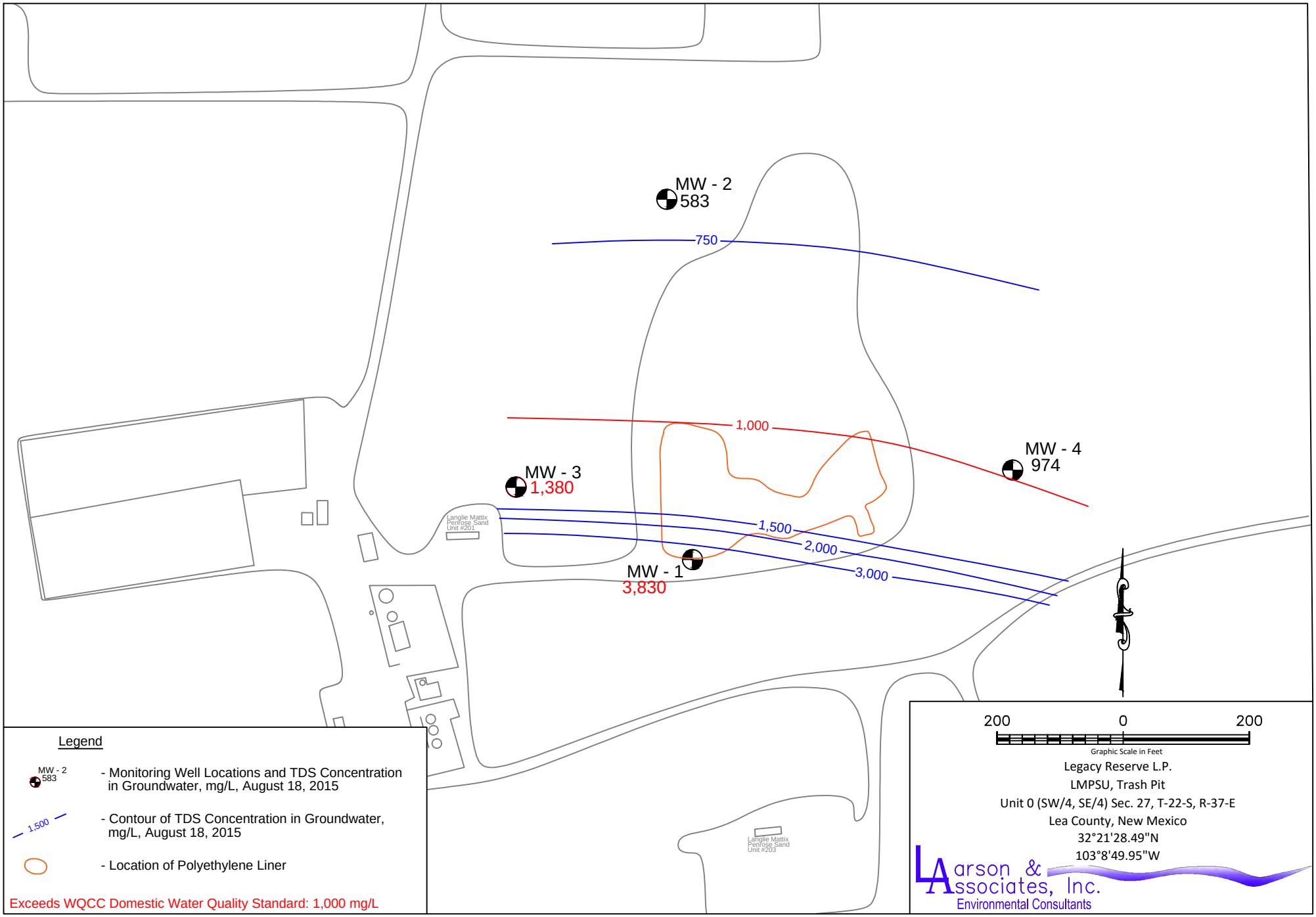



Figure 6a - Total Dissolved Solids Concentration in Groundwater, August 18, 2015

11" x 8.5"

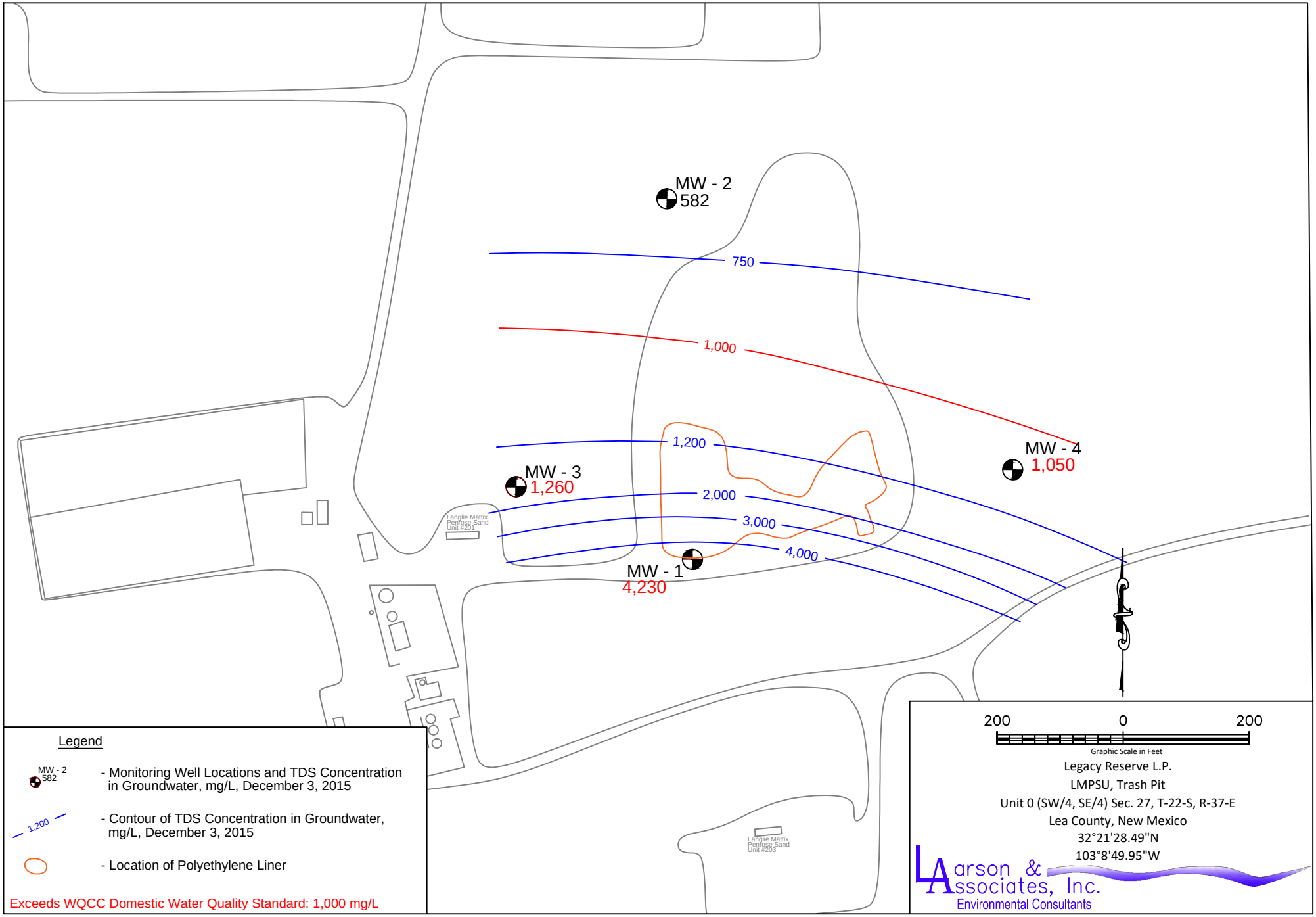



Figure 6b - Total Dissolved Solids Concentration in Groundwater, December 3, 2015

11" x 8.5"

**APPENDIX A**

**LABORATORY REPORTS**
**AND**
**CHAIN OF CUSTODY DOCUMENTATION**

August 27, 2015

Mark Larson
Larson & Associates
507 N. Marienfeld #205
Midland, TX 79701
TEL: (432) 687-0901
FAX (432) 687-0456

Order No.: 1508205

RE: LMPSU Trash Pit

Dear Mark Larson:

DHL Analytical, Inc. received 4 sample(s) on 8/20/2015 for the analyses presented in the following report.

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

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

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-14

# Table of Contents

DHL ANALYTICAL
2300 Double Creek Dr. ■ Round Rock, TX 78664
Phone (512) 388-8222 ■ FAX (512) 388-8229
Web: www.dhlanalytical.com
E-Mail: login@dhlanalytical.com

№ 67189

# CHAIN-OF-CUSTODY

CLIENT: Larson and Associates
ADDRESS: 507 N Marienfeld Ste. 205 Midland, TX 79701
PHONE: (432) 687-0901 FAX/E-MAIL:
DATA REPORTED TO: Mark Larson
ADDITIONAL REPORT COPIES TO:

DATE: 8/18/15 PAGE 1 OF 1
PO #: DHL WORK ORDER #: 1508205
PROJECT LOCATION OR NAME: LMPSU Trash Pit
CLENT PROJECT #: 14-0107-01 COLLECTOR: Sarah Shasby

Authorize 5% surcharge for TRRP Report? ☐ Yes ☒ No

S=SOIL W=WATER A=AIR L=LIQUID SE=SEDIMENT P=PAINT SL=SLUDGE O=OTHER SO=SOLID

PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED

ANALYSES: BTEX ☒ MTBE ☐ [METHOD 8021] | TPH 1005 ☐ TPH 1006 ☐ HOLD 1006 ☐ | GRO [METHOD 8015] ☐ DRO [METHOD 8105] ☐ | VOC 8260 ☐ VOC 624 ☐ VOC 8260/5035 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLD PAH ☐ SVOC 625 ☐ | 8270 PEST ☐ 625 PEST/PCB ☐ 608 PCB ☐ | 8270 O-P PEST ☐ 8082 PCB ☐ 8270 PCB ☐ | 8321 HERB ☐ T PHOS, AMMONIA ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ | PH ☐ HEX CHROM ☐ ALKALINITY ☒ COD ☐ | CHLORIDE ☒ ANIONS ☐ | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ FLASHPOINT ☐ DGAS ☐ | TDS ☒ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | NO3, SO4, Cl, F, Alk, TDS

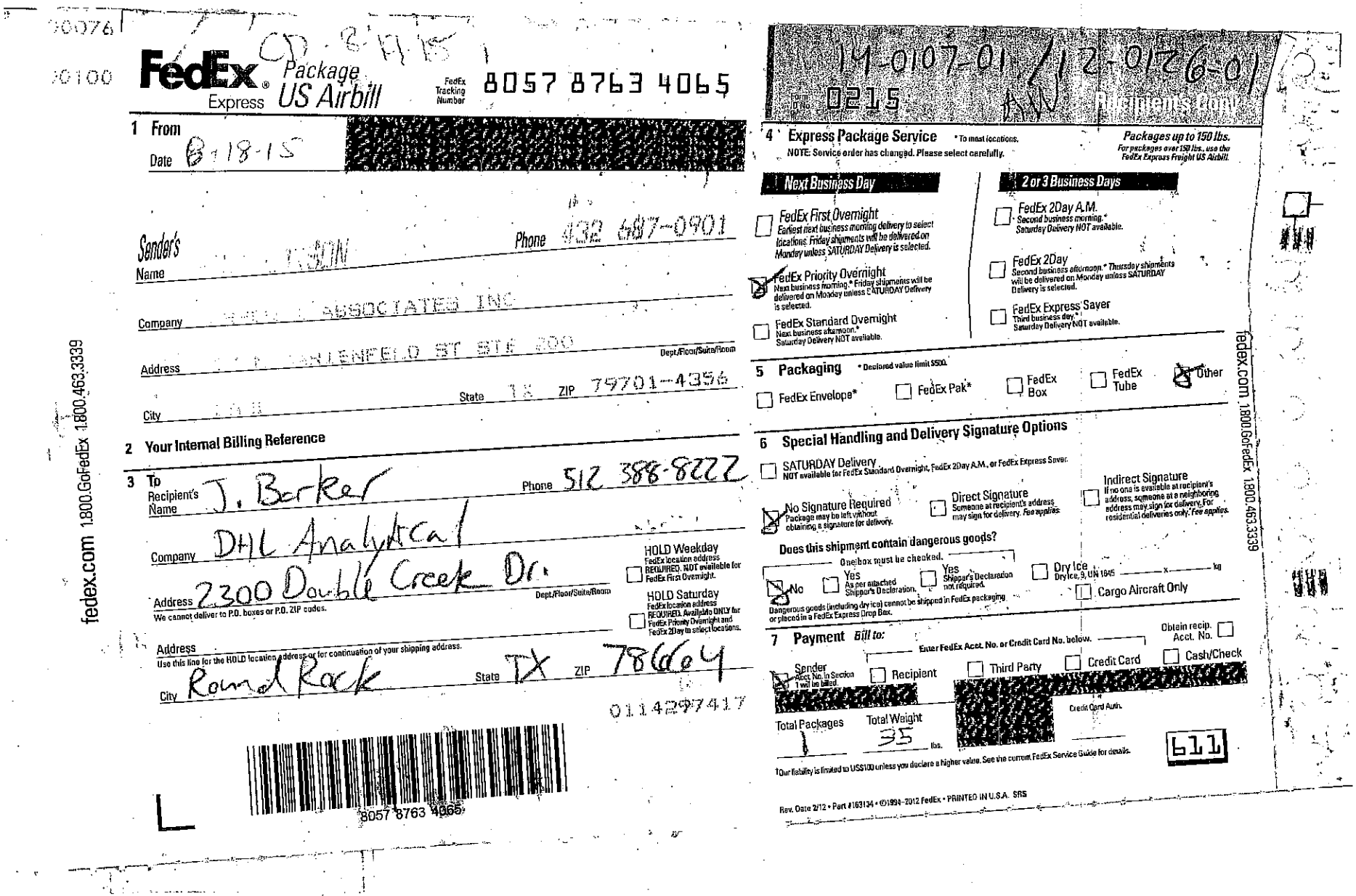
| Field Sample I.D. | DHL Lab # | Date | Time | Matrix | Container Type | # of Containers | HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | BTEX | TPH 1005 | GRO | VOC 8260 | SVOC 8270 | 8270 PEST | 8270 O-P PEST | 8321 HERB | METALS 6020 | RCRA | PH | CHLORIDE | TCLP-SVOC | TCLP-METALS | RCI | TDS | NO3, SO4, Cl, F, Alk, TDS | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 01 | 8/18/15 | 12:30 | W | Poly/VOA | 5 | X | X | | X | | X | | | | | | | | | | | X | X | | | X | X | X |
| MW-3 | 02 | " | 12:45 | " | " | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-2 | 03 | " | 1:00 | " | " | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-1 | 04 | " | 1:15 | " | " | | | | | | | | | | | | | | | | | | | | | | | | |

RELINQUISHED BY: (Signature) DATE/TIME 8/18/15 5:00PM RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) DATE/TIME 8/20/15 915 RECEIVED BY: (Signature)
RELINQUISHED BY: (Signature) DATE/TIME RECEIVED BY: (Signature)

☐ DHL DISPOSAL @ $5.00 each ☐ Return 3

**TURN AROUND TIME**
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☑
OTHER ☐ _____

**LABORATORY USE ONLY:**
RECEIVING TEMP: 5.2 THERM #: 78
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
CARRIER: ☐ LONE STAR ☒ FEDEX ☐ UPS ☐ OTHER
☐ COURIER DELIVERY
☐ HAND DELIVERED



FedEx Express Package US Airbill

FedEx Tracking Number 8057 8763 4065

14-0107-01, 12-0126-01

1 From

Date 8/18/15

Sender's Name [redacted] Phone 432 687-0901

Company [redacted] ASSOCIATES INC

Address [redacted] ENFIELD ST STE 200 Dept/Floor/Suite/Room

City [redacted] State TX ZIP 79701-4356

2 Your Internal Billing Reference

3 To

Recipient's Name J. Barker Phone 512 388-8222

Company DHL Analytical

Address 2300 Double Creek Dr. Dept/Floor/Suite/Room

We cannot deliver to P.O. boxes or P.O. ZIP codes.

Address Use this line for the HOLD location address or for continuation of your shipping address.

City Round Rock State TX ZIP 78664

HOLD Weekday: FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday: FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

01142977417

8057 8763 4065

4 Express Package Service * To most locations.

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day

- FedEx First Overnight: Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Priority Overnight: Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected. [X]
- FedEx Standard Overnight: Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- FedEx 2Day A.M.: Second business morning.* Saturday Delivery NOT available.
- FedEx 2Day: Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- FedEx Express Saver: Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

FedEx Envelope* | FedEx Pak* | FedEx Box | FedEx Tube | [X] Other

6 Special Handling and Delivery Signature Options

SATURDAY Delivery NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

- [X] No Signature Required: Package may be left without obtaining a signature for delivery.
- Direct Signature: Someone at recipient's address may sign for delivery. Fee applies.
- Indirect Signature: If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

Does this shipment contain dangerous goods? One box must be checked.

[X] No | Yes As per attached Shipper's Declaration. | Yes Shipper's Declaration not required. | Dry Ice Dry Ice, 9, UN 1845 ____ x ____ kg

Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. [ ]

[X] Sender Acct. No. in Section 1 will be billed. | Recipient | Third Party | Credit Card | Cash/Check

Credit Card Auth.

Total Packages 1 Total Weight 35 lbs.

611

†Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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fedex.com 1.800.GoFedEx 1.800.463.3339

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DHL Analytical, Inc.

## Sample Receipt Checklist

Client Name Larson & Associates | Date Received: 8/20/2015

Work Order Number 1508205 | Received by MB

Checklist completed by: [signature] Signature | 8/20/2015 Date | Reviewed by MB Initials | 8/20/2015 Date

Carrier name FedEx 1day

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shippping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | 5.2 °C |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH<2 acceptable upon receipt? | Yes ☑ | No ☐ | NA ☐ LOT # 8086 |
| | Adjusted? NO | | Checked by [signature] |
| Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt? | Yes ☐ | No ☐ | NA ☑ LOT # |
| | Adjusted? | | Checked by |

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

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments:

Corrective Action:

Page 1 of 1

**DHL Analytical, Inc.** **Date:** *27-Aug-15*

**CLIENT:** Larson & Associates
**Project:** LMPSU Trash Pit
**Lab Order:** 1508205

# CASE NARRATIVE

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

Method SW6020A - Metals Analysis
Method SW8021B - Volatiles by GC Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

## LOG IN

The samples were received and log-in performed on 8/20/15. A total of 4 samples were received. The Time Of Collection was Mountain Standard Time. Due to a delay in the FedEx delivery by one day, the samples arrived at DHL Analytical just prior to the 48 hour HoldTime expiration for Nitrate-N. The samples were analyzed as quickly as possible at two and a half hours or less outside of the 48 hour HoldTime. All Nitrate-N results are flagged with a "C" to designate this. The samples arrived in good condition and were properly packaged.

## METALS ANALYSIS

For Metals analysis performed on 8/25/15 the matrix spike and matrix spike duplicate recoveries were below control limits for Calcium and/or Sodium. These are flagged accordingly in the QC summary report. The reference sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

## ANIONS ANALYSIS

For Anions analysis performed on 8/20/15 the matrix spike and matrix spike duplicate recoveries were out of control limits for Nitrate-N and/or Sulfate. These are flagged accordingly. The reference sample selected for the matrix spike and matrix spike duplicate was not from this work order. The LCS was within control limits for these analytes. No further corrective actions were taken.

## DHL Analytical, Inc.

**Date:** *27-Aug-15*

**CLIENT:** Larson & Associates
**Project:** LMPSU Trash Pit
**Lab Order:** 1508205

# Work Order Sample Summary

| Lab Smp ID | Client Sample ID | Tag Number | Date Collected | Date Recved |
|---|---|---|---|---|
| 1508205-01 | MW-4 | | 08/18/15 12:30 PM | 8/20/2015 |
| 1508205-02 | MW-3 | | 08/18/15 12:45 PM | 8/20/2015 |
| 1508205-03 | MW-2 | | 08/18/15 01:00 PM | 8/20/2015 |
| 1508205-04 | MW-1 | | 08/18/15 01:15 PM | 8/20/2015 |

**Lab Order:** 1508205
**Client:** Larson & Associates
**Project:** LMPSU Trash Pit

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1508205-01A | MW-4 | 08/18/15 12:30 PM | Aqueous | SW5030C | Purge and Trap Water GC | 08/20/15 08:36 AM | 71054 |
| 1508205-01B | MW-4 | 08/18/15 12:30 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 08/20/15 10:44 AM | 71071 |
| 1508205-01C | MW-4 | 08/18/15 12:30 PM | Aqueous | M2320 B | Alkalinity Preparation | 08/24/15 08:44 AM | 71107 |
| | MW-4 | 08/18/15 12:30 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-4 | 08/18/15 12:30 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-4 | 08/18/15 12:30 PM | Aqueous | M2540C | TDS Preparation | 08/21/15 08:40 AM | 71082 |
| 1508205-02A | MW-3 | 08/18/15 12:45 PM | Aqueous | SW5030C | Purge and Trap Water GC | 08/20/15 08:36 AM | 71054 |
| 1508205-02B | MW-3 | 08/18/15 12:45 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 08/20/15 10:44 AM | 71071 |
| 1508205-02C | MW-3 | 08/18/15 12:45 PM | Aqueous | M2320 B | Alkalinity Preparation | 08/24/15 08:44 AM | 71107 |
| | MW-3 | 08/18/15 12:45 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-3 | 08/18/15 12:45 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-3 | 08/18/15 12:45 PM | Aqueous | M2540C | TDS Preparation | 08/21/15 08:40 AM | 71082 |
| 1508205-03A | MW-2 | 08/18/15 01:00 PM | Aqueous | SW5030C | Purge and Trap Water GC | 08/20/15 08:36 AM | 71054 |
| 1508205-03B | MW-2 | 08/18/15 01:00 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 08/20/15 10:44 AM | 71071 |
| 1508205-03C | MW-2 | 08/18/15 01:00 PM | Aqueous | M2320 B | Alkalinity Preparation | 08/24/15 08:44 AM | 71107 |
| | MW-2 | 08/18/15 01:00 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-2 | 08/18/15 01:00 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-2 | 08/18/15 01:00 PM | Aqueous | M2540C | TDS Preparation | 08/21/15 08:40 AM | 71082 |
| 1508205-04A | MW-1 | 08/18/15 01:15 PM | Aqueous | SW5030C | Purge and Trap Water GC | 08/20/15 08:36 AM | 71054 |
| 1508205-04B | MW-1 | 08/18/15 01:15 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 08/20/15 10:44 AM | 71071 |
| 1508205-04C | MW-1 | 08/18/15 01:15 PM | Aqueous | M2320 B | Alkalinity Preparation | 08/24/15 08:44 AM | 71107 |
| | MW-1 | 08/18/15 01:15 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-1 | 08/18/15 01:15 PM | Aqueous | E300 | Anion Preparation | 08/20/15 02:04 PM | 71075 |
| | MW-1 | 08/18/15 01:15 PM | Aqueous | M2540C | TDS Preparation | 08/21/15 08:40 AM | 71082 |

**Lab Order:** 1508205
**Client:** Larson & Associates
**Project:** LMPSU Trash Pit

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1508205-01A | MW-4 | Aqueous | SW8021B | Volatile Organics by GC | 71054 | 1 | 08/20/15 01:11 PM | GC8_150820A |
| 1508205-01B | MW-4 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 71071 | 50 | 08/25/15 01:18 PM | ICP-MS4_150825B |
| 1508205-01C | MW-4 | Aqueous | M2320 B | Alkalinity | 71107 | 1 | 08/24/15 10:29 AM | TITRATOR_150824B |
| | MW-4 | Aqueous | E300 | Anions by IC method - Water | 71075 | 1 | 08/20/15 03:53 PM | IC2_150820A |
| | MW-4 | Aqueous | E300 | Anions by IC method - Water | 71075 | 10 | 08/20/15 07:01 PM | IC2_150820A |
| | MW-4 | Aqueous | M2540C | Total Dissolved Solids | 71082 | 1 | 08/24/15 08:35 AM | WC_150821B |
| 1508205-02A | MW-3 | Aqueous | SW8021B | Volatile Organics by GC | 71054 | 1 | 08/20/15 01:34 PM | GC8_150820A |
| 1508205-02B | MW-3 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 71071 | 50 | 08/25/15 01:20 PM | ICP-MS4_150825B |
| 1508205-02C | MW-3 | Aqueous | M2320 B | Alkalinity | 71107 | 1 | 08/24/15 10:35 AM | TITRATOR_150824B |
| | MW-3 | Aqueous | E300 | Anions by IC method - Water | 71075 | 10 | 08/20/15 07:15 PM | IC2_150820A |
| | MW-3 | Aqueous | E300 | Anions by IC method - Water | 71075 | 1 | 08/20/15 04:08 PM | IC2_150820A |
| | MW-3 | Aqueous | M2540C | Total Dissolved Solids | 71082 | 1 | 08/24/15 08:35 AM | WC_150821B |
| 1508205-03A | MW-2 | Aqueous | SW8021B | Volatile Organics by GC | 71054 | 1 | 08/20/15 01:56 PM | GC8_150820A |
| 1508205-03B | MW-2 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 71071 | 50 | 08/25/15 01:22 PM | ICP-MS4_150825B |
| 1508205-03C | MW-2 | Aqueous | M2320 B | Alkalinity | 71107 | 1 | 08/24/15 10:42 AM | TITRATOR_150824B |
| | MW-2 | Aqueous | E300 | Anions by IC method - Water | 71075 | 1 | 08/20/15 04:22 PM | IC2_150820A |
| | MW-2 | Aqueous | E300 | Anions by IC method - Water | 71075 | 10 | 08/20/15 07:30 PM | IC2_150820A |
| | MW-2 | Aqueous | M2540C | Total Dissolved Solids | 71082 | 1 | 08/24/15 08:35 AM | WC_150821B |
| 1508205-04A | MW-1 | Aqueous | SW8021B | Volatile Organics by GC | 71054 | 1 | 08/20/15 02:19 PM | GC8_150820A |
| 1508205-04B | MW-1 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 71071 | 50 | 08/25/15 01:24 PM | ICP-MS4_150825B |
| 1508205-04C | MW-1 | Aqueous | M2320 B | Alkalinity | 71107 | 1 | 08/24/15 11:03 AM | TITRATOR_150824B |
| | MW-1 | Aqueous | E300 | Anions by IC method - Water | 71075 | 1 | 08/20/15 04:37 PM | IC2_150820A |
| | MW-1 | Aqueous | E300 | Anions by IC method - Water | 71075 | 100 | 08/20/15 07:44 PM | IC2_150820A |
| | MW-1 | Aqueous | M2540C | Total Dissolved Solids | 71082 | 1 | 08/24/15 08:35 AM | WC_150821B |

# DHL Analytical, Inc.

**Date:** *27-Aug-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-4 |
| **Project:** | LMPSU Trash Pit | **Lab ID:** | 1508205-01 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 08/18/15 12:30 PM |
| **Lab Order:** | 1508205 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 08/20/15 01:11 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:11 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:11 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 08/20/15 01:11 PM |
| Surr: a,a,a-Trifluorotoluene | 102 | 0 | 87-113 | | %REC | 1 | 08/20/15 01:11 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 70.6 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:18 PM |
| Magnesium | 52.8 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:18 PM |
| Potassium | 8.28 | 5.00 | 15.0 | J | mg/L | 50 | 08/25/15 01:18 PM |
| Sodium | 160 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:18 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 213 | 3.00 | 10.0 | | mg/L | 10 | 08/20/15 07:01 PM |
| Nitrate-N | 1.54 | 0.100 | 0.500 | C | mg/L | 1 | 08/20/15 03:53 PM |
| Sulfate | 251 | 10.0 | 30.0 | | mg/L | 10 | 08/20/15 07:01 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 256 | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:29 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:29 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:29 AM |
| Alkalinity, Total (As CaCO3) | 256 | 20.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:29 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **PT** |
| Total Dissolved Solids (Residue, Filterable) | 974 | 10.0 | 10.0 | | mg/L | 1 | 08/24/15 08:35 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *27-Aug-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-3 |
| **Project:** | LMPSU Trash Pit | **Lab ID:** | 1508205-02 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 08/18/15 12:45 PM |
| **Lab Order:** | 1508205 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 08/20/15 01:34 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:34 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:34 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 08/20/15 01:34 PM |
| Surr: a,a,a-Trifluorotoluene | 102 | 0 | 87-113 | | %REC | 1 | 08/20/15 01:34 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 147 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:20 PM |
| Magnesium | 51.5 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:20 PM |
| Potassium | 8.22 | 5.00 | 15.0 | J | mg/L | 50 | 08/25/15 01:20 PM |
| Sodium | 284 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:20 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 405 | 3.00 | 10.0 | | mg/L | 10 | 08/20/15 07:15 PM |
| Nitrate-N | 1.50 | 0.100 | 0.500 | C | mg/L | 1 | 08/20/15 04:08 PM |
| Sulfate | 239 | 10.0 | 30.0 | | mg/L | 10 | 08/20/15 07:15 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 230 | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 10:35 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 10:35 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 10:35 AM |
| Alkalinity, Total (As CaCO3) | 230 | 20.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 10:35 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **PT** |
| Total Dissolved Solids (Residue, Filterable) | 1380 | 50.0 | 50.0 | | mg/L | 1 | 08/24/15 08:35 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *27-Aug-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-2 |
| **Project:** | LMPSU Trash Pit | **Lab ID:** | 1508205-03 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 08/18/15 01:00 PM |
| **Lab Order:** | 1508205 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 08/20/15 01:56 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:56 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 01:56 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 08/20/15 01:56 PM |
| Surr: a,a,a-Trifluorotoluene | 102 | 0 | 87-113 | | %REC | 1 | 08/20/15 01:56 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 118 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:22 PM |
| Magnesium | 32.6 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:22 PM |
| Potassium | 6.01 | 5.00 | 15.0 | J | mg/L | 50 | 08/25/15 01:22 PM |
| Sodium | 104 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:22 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 73.9 | 3.00 | 10.0 | | mg/L | 10 | 08/20/15 07:30 PM |
| Nitrate-N | 1.35 | 0.100 | 0.500 | C | mg/L | 1 | 08/20/15 04:22 PM |
| Sulfate | 114 | 1.00 | 3.00 | | mg/L | 1 | 08/20/15 04:22 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 274 | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:42 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:42 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:42 AM |
| Alkalinity, Total (As CaCO3) | 274 | 20.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 08/24/15 10:42 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **PT** |
| Total Dissolved Solids (Residue, Filterable) | 583 | 10.0 | 10.0 | | mg/L | 1 | 08/24/15 08:35 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *27-Aug-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-1 |
| **Project:** | LMPSU Trash Pit | **Lab ID:** | 1508205-04 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 08/18/15 01:15 PM |
| **Lab Order:** | 1508205 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 08/20/15 02:19 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 02:19 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 08/20/15 02:19 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 08/20/15 02:19 PM |
| Surr: a,a,a-Trifluorotoluene | 102 | 0 | 87-113 | | %REC | 1 | 08/20/15 02:19 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 152 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:24 PM |
| Magnesium | 224 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:24 PM |
| Potassium | 21.5 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:24 PM |
| Sodium | 820 | 5.00 | 15.0 | | mg/L | 50 | 08/25/15 01:24 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 1600 | 30.0 | 100 | | mg/L | 100 | 08/20/15 07:44 PM |
| Nitrate-N | ND | 0.100 | 0.500 | C | mg/L | 1 | 08/20/15 04:37 PM |
| Sulfate | 433 | 100 | 300 | | mg/L | 100 | 08/20/15 07:44 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 723 | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 11:03 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 11:03 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 11:03 AM |
| Alkalinity, Total (As CaCO3) | 723 | 20.0 | 20.0 | | mg/L @ pH 4.53 | 1 | 08/24/15 11:03 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **PT** |
| Total Dissolved Solids (Residue, Filterable) | 3830 | 50.0 | 50.0 | | mg/L | 1 | 08/24/15 08:35 AM |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: GC8_150820A**

The QC data in batch 71054 applies to the following samples: 1508205-01A, 1508205-02A, 1508205-03A, 1508205-04A

Sample ID **LCS-71054** Batch ID: **71054** TestNo: **SW8021B** Units: **mg/L**
SampType: **LCS** Run ID: **GC8_150820A** Analysis Date: **8/20/2015 10:09:59 AM** Prep Date: **8/20/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0477 | 0.00200 | 0.0464 | 0 | 103 | 81 | 125 | | | |
| Toluene | 0.0480 | 0.00600 | 0.0464 | 0 | 103 | 84 | 123 | | | |
| Ethylbenzene | 0.0486 | 0.00600 | 0.0464 | 0 | 105 | 83 | 119 | | | |
| Xylenes, Total | 0.148 | 0.00900 | 0.139 | 0 | 106 | 81 | 117 | | | |
| Surr: a,a,a-Trifluorotoluene | 206 | | 200.0 | | 103 | 87 | 113 | | | |

Sample ID **MB-71054** Batch ID: **71054** TestNo: **SW8021B** Units: **mg/L**
SampType: **MBLK** Run ID: **GC8_150820A** Analysis Date: **8/20/2015 10:32:38 AM** Prep Date: **8/20/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.00200 | | | | | | | | |
| Toluene | ND | 0.00600 | | | | | | | | |
| Ethylbenzene | ND | 0.00600 | | | | | | | | |
| Xylenes, Total | ND | 0.00900 | | | | | | | | |
| Surr: a,a,a-Trifluorotoluene | 206 | | 200.0 | | 103 | 87 | 113 | | | |

Sample ID **1508181-01AMS** Batch ID: **71054** TestNo: **SW8021B** Units: **mg/L**
SampType: **MS** Run ID: **GC8_150820A** Analysis Date: **8/20/2015 2:41:58 PM** Prep Date: **8/20/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0467 | 0.00200 | 0.0464 | 0 | 101 | 81 | 125 | | | |
| Toluene | 0.0467 | 0.00600 | 0.0464 | 0 | 101 | 84 | 123 | | | |
| Ethylbenzene | 0.0469 | 0.00600 | 0.0464 | 0 | 101 | 83 | 119 | | | |
| Xylenes, Total | 0.143 | 0.00900 | 0.139 | 0 | 103 | 81 | 117 | | | |
| Surr: a,a,a-Trifluorotoluene | 205 | | 200.0 | | 102 | 87 | 113 | | | |

Sample ID **1508181-01AMSD** Batch ID: **71054** TestNo: **SW8021B** Units: **mg/L**
SampType: **MSD** Run ID: **GC8_150820A** Analysis Date: **8/20/2015 3:04:36 PM** Prep Date: **8/20/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0470 | 0.00200 | 0.0464 | 0 | 101 | 81 | 125 | 0.467 | 20 | |
| Toluene | 0.0471 | 0.00600 | 0.0464 | 0 | 102 | 84 | 123 | 0.803 | 20 | |
| Ethylbenzene | 0.0474 | 0.00600 | 0.0464 | 0 | 102 | 83 | 119 | 1.01 | 20 | |
| Xylenes, Total | 0.144 | 0.00900 | 0.139 | 0 | 103 | 81 | 117 | 0.390 | 20 | |
| Surr: a,a,a-Trifluorotoluene | 208 | | 200.0 | | 104 | 87 | 113 | 0 | 0 | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: GC8_150820A**

| Sample ID **ICV-150820** | Batch ID: **R81268** | TestNo: **SW8021B** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GC8_150820A** | Analysis Date: **8/20/2015 9:47:16 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0896 | 0.00200 | 0.0928 | 0 | 96.5 | 80 | 120 | | | |
| Toluene | 0.0909 | 0.00600 | 0.0928 | 0 | 98.0 | 80 | 120 | | | |
| Ethylbenzene | 0.0917 | 0.00600 | 0.0928 | 0 | 98.8 | 80 | 120 | | | |
| Xylenes, Total | 0.279 | 0.00900 | 0.278 | 0 | 100 | 80 | 120 | | | |
| Surr: a,a,a-Trifluorotoluene | 203 | | 200.0 | | 102 | 87 | 113 | | | |

| Sample ID **CCV1-150820** | Batch ID: **R81268** | TestNo: **SW8021B** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GC8_150820A** | Analysis Date: **8/20/2015 3:49:47 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0469 | 0.00200 | 0.0464 | 0 | 101 | 80 | 120 | | | |
| Toluene | 0.0470 | 0.00600 | 0.0464 | 0 | 101 | 80 | 120 | | | |
| Ethylbenzene | 0.0473 | 0.00600 | 0.0464 | 0 | 102 | 80 | 120 | | | |
| Xylenes, Total | 0.143 | 0.00900 | 0.139 | 0 | 103 | 80 | 120 | | | |
| Surr: a,a,a-Trifluorotoluene | 205 | | 200.0 | | 102 | 87 | 113 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_150825B**

The QC data in batch 71071 applies to the following samples: 1508205-01B, 1508205-02B, 1508205-03B, 1508205-04B

| Sample ID | **MB-71071** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:22:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ND | 0.300 | | | | | | | | |
| Magnesium | ND | 0.300 | | | | | | | | |
| Potassium | ND | 0.300 | | | | | | | | |
| Sodium | ND | 0.300 | | | | | | | | |

| Sample ID | **LCS-71071** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:26:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.48 | 0.300 | 5.00 | 0 | 89.7 | 80 | 120 | | | |
| Magnesium | 4.82 | 0.300 | 5.00 | 0 | 96.5 | 80 | 120 | | | |
| Potassium | 4.64 | 0.300 | 5.00 | 0 | 92.9 | 80 | 120 | | | |
| Sodium | 4.86 | 0.300 | 5.00 | 0 | 97.3 | 80 | 120 | | | |

| Sample ID | **LCSD-71071** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCSD** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:28:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.60 | 0.300 | 5.00 | 0 | 92.0 | 80 | 120 | 2.60 | 15 | |
| Magnesium | 4.96 | 0.300 | 5.00 | 0 | 99.1 | 80 | 120 | 2.68 | 15 | |
| Potassium | 4.77 | 0.300 | 5.00 | 0 | 95.4 | 80 | 120 | 2.64 | 15 | |
| Sodium | 4.98 | 0.300 | 5.00 | 0 | 99.7 | 80 | 120 | 2.43 | 15 | |

| Sample ID | **1508160-01A SD** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **SD** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:34:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 11.3 | 1.50 | 0 | 10.9 | | | | 3.13 | 10 | |

| Sample ID | **1508160-01A PDS** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **PDS** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:53:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 15.2 | 0.300 | 5.00 | 10.9 | 85.7 | 80 | 120 | | | |

| Sample ID | **1508160-01A MS** | Batch ID: | **71071** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MS** | Run ID: | **ICP-MS4_150825B** | Analysis Date: | **8/25/2015 12:55:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 389 | 0.300 | 5.00 | 384 | 116 | 80 | 120 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_150825B**

| Sample ID **1508160-01A MS** | Batch ID: **71071** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MS** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 12:55:00 PM** | Prep Date: **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Magnesium | 137 | 0.300 | 5.00 | 133 | 84.5 | 80 | 120 | | | |
| Potassium | 15.6 | 0.300 | 5.00 | 10.9 | 93.1 | 80 | 120 | | | |
| Sodium | 133 | 0.300 | 5.00 | 130 | 59.5 | 80 | 120 | | | S |

| Sample ID **1508160-01A MSD** | Batch ID: **71071** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 12:57:00 PM** | Prep Date: **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 387 | 0.300 | 5.00 | 384 | 61.8 | 80 | 120 | 0.702 | 15 | S |
| Magnesium | 138 | 0.300 | 5.00 | 133 | 102 | 80 | 120 | 0.624 | 15 | |
| Potassium | 15.7 | 0.300 | 5.00 | 10.9 | 96.2 | 80 | 120 | 0.973 | 15 | |
| Sodium | 133 | 0.300 | 5.00 | 130 | 76.6 | 80 | 120 | 0.645 | 15 | S |

| Sample ID **1508160-01A SD** | Batch ID: **71071** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **SD** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:49:00 PM** | Prep Date: **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 388 | 150 | 0 | 388 | | | | 0.110 | 10 | |
| Magnesium | 144 | 150 | 0 | 142 | | | | 1.35 | 10 | |
| Sodium | 133 | 150 | 0 | 136 | | | | 1.95 | 10 | |

| Sample ID **1508160-01A PDS** | Batch ID: **71071** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **PDS** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:51:00 PM** | Prep Date: **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 843 | 30.0 | 500 | 388 | 91.0 | 80 | 120 | | | |
| Magnesium | 662 | 30.0 | 500 | 142 | 104 | 80 | 120 | | | |
| Sodium | 651 | 30.0 | 500 | 136 | 103 | 80 | 120 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_150825B**

| Sample ID **ICV-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 10:39:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 2.34 | 0.300 | 2.50 | 0 | 93.6 | 90 | 110 | | | |
| Magnesium | 2.55 | 0.300 | 2.50 | 0 | 102 | 90 | 110 | | | |
| Potassium | 2.47 | 0.300 | 2.50 | 0 | 98.6 | 90 | 110 | | | |
| Sodium | 2.51 | 0.300 | 2.50 | 0 | 101 | 90 | 110 | | | |

| Sample ID **LCVL-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 10:45:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.0937 | 0.300 | 0.100 | 0 | 93.7 | 70 | 130 | | | |
| Magnesium | 0.102 | 0.300 | 0.100 | 0 | 102 | 70 | 130 | | | |
| Potassium | 0.0979 | 0.300 | 0.100 | 0 | 97.9 | 70 | 130 | | | |
| Sodium | 0.0891 | 0.300 | 0.100 | 0 | 89.1 | 70 | 130 | | | |

| Sample ID **CCV2-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 11:59:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.85 | 0.300 | 5.00 | 0 | 97.1 | 90 | 110 | | | |
| Magnesium | 5.24 | 0.300 | 5.00 | 0 | 105 | 90 | 110 | | | |
| Potassium | 4.93 | 0.300 | 5.00 | 0 | 98.7 | 90 | 110 | | | |
| Sodium | 5.22 | 0.300 | 5.00 | 0 | 104 | 90 | 110 | | | |

| Sample ID **LCVL2-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 12:12:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.0977 | 0.300 | 0.100 | 0 | 97.7 | 70 | 130 | | | |
| Magnesium | 0.103 | 0.300 | 0.100 | 0 | 103 | 70 | 130 | | | |
| Potassium | 0.0918 | 0.300 | 0.100 | 0 | 91.8 | 70 | 130 | | | |
| Sodium | 0.0846 | 0.300 | 0.100 | 0 | 84.6 | 70 | 130 | | | |

| Sample ID **CCV3-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:10:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.81 | 0.300 | 5.00 | 0 | 96.1 | 90 | 110 | | | |
| Magnesium | 5.18 | 0.300 | 5.00 | 0 | 104 | 90 | 110 | | | |
| Potassium | 4.93 | 0.300 | 5.00 | 0 | 98.6 | 90 | 110 | | | |
| Sodium | 5.11 | 0.300 | 5.00 | 0 | 102 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_150825B**

| Sample ID **LCVL3-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:14:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.102 | 0.300 | 0.100 | 0 | 102 | 70 | 130 | | | |
| Magnesium | 0.108 | 0.300 | 0.100 | 0 | 108 | 70 | 130 | | | |
| Potassium | 0.0906 | 0.300 | 0.100 | 0 | 90.6 | 70 | 130 | | | |
| Sodium | 0.0818 | 0.300 | 0.100 | 0 | 81.8 | 70 | 130 | | | |

| Sample ID **CCV4-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:38:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.81 | 0.300 | 5.00 | 0 | 96.2 | 90 | 110 | | | |
| Magnesium | 5.20 | 0.300 | 5.00 | 0 | 104 | 90 | 110 | | | |
| Potassium | 4.91 | 0.300 | 5.00 | 0 | 98.1 | 90 | 110 | | | |
| Sodium | 5.16 | 0.300 | 5.00 | 0 | 103 | 90 | 110 | | | |

| Sample ID **LCVL4-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:43:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.0999 | 0.300 | 0.100 | 0 | 99.9 | 70 | 130 | | | |
| Magnesium | 0.108 | 0.300 | 0.100 | 0 | 108 | 70 | 130 | | | |
| Potassium | 0.0880 | 0.300 | 0.100 | 0 | 88.0 | 70 | 130 | | | |
| Sodium | 0.0980 | 0.300 | 0.100 | 0 | 98.0 | 70 | 130 | | | |

| Sample ID **CCV5-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 1:59:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.77 | 0.300 | 5.00 | 0 | 95.5 | 90 | 110 | | | |
| Magnesium | 5.19 | 0.300 | 5.00 | 0 | 104 | 90 | 110 | | | |
| Sodium | 5.11 | 0.300 | 5.00 | 0 | 102 | 90 | 110 | | | |

| Sample ID **LCVL5-150825** | Batch ID: **R81358** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_150825B** | Analysis Date: **8/25/2015 2:03:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.0943 | 0.300 | 0.100 | 0 | 94.3 | 70 | 130 | | | |
| Magnesium | 0.102 | 0.300 | 0.100 | 0 | 102 | 70 | 130 | | | |
| Sodium | 0.0778 | 0.300 | 0.100 | 0 | 77.8 | 70 | 130 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: IC2_150820A**

The QC data in batch 71075 applies to the following samples: 1508205-01C, 1508205-02C, 1508205-03C, 1508205-04C

| Sample ID | **LCS-71075** | Batch ID: | **71075** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **IC2_150820A** | Analysis Date: | **8/20/2015 3:10:06 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10.1 | 1.00 | 10.00 | 0 | 101 | 90 | 110 | | | |
| Nitrate-N | 4.84 | 0.500 | 5.000 | 0 | 96.9 | 90 | 110 | | | |
| Sulfate | 29.9 | 3.00 | 30.00 | 0 | 99.7 | 90 | 110 | | | |

| Sample ID | **LCSD-71075** | Batch ID: | **71075** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCSD** | Run ID: | **IC2_150820A** | Analysis Date: | **8/20/2015 3:24:40 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10.1 | 1.00 | 10.00 | 0 | 101 | 90 | 110 | 0.425 | 20 | |
| Nitrate-N | 4.82 | 0.500 | 5.000 | 0 | 96.4 | 90 | 110 | 0.523 | 20 | |
| Sulfate | 29.5 | 3.00 | 30.00 | 0 | 98.4 | 90 | 110 | 1.34 | 20 | |

| Sample ID | **MB-71075** | Batch ID: | **71075** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **IC2_150820A** | Analysis Date: | **8/20/2015 3:39:15 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 1.00 | | | | | | | | |
| Nitrate-N | ND | 0.500 | | | | | | | | |
| Sulfate | ND | 3.00 | | | | | | | | |

| Sample ID | **1508207-05DMS** | Batch ID: | **71075** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MS** | Run ID: | **IC2_150820A** | Analysis Date: | **8/20/2015 9:27:00 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 293 | 10.0 | 200.0 | 95.63 | 98.9 | 90 | 110 | | | |
| Nitrate-N | 46.8 | 5.00 | 45.16 | 6.287 | 89.7 | 90 | 110 | | | |
| Sulfate | 657 | 30.0 | 200.0 | 429.0 | 114 | 90 | 110 | | | S |

| Sample ID | **1508207-05DMSD** | Batch ID: | **71075** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MSD** | Run ID: | **IC2_150820A** | Analysis Date: | **8/20/2015 9:41:34 PM** | Prep Date: | **8/20/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 292 | 10.0 | 200.0 | 95.63 | 98.2 | 90 | 110 | 0.479 | 20 | |
| Nitrate-N | 46.4 | 5.00 | 45.16 | 6.287 | 88.7 | 90 | 110 | 0.983 | 20 | S |
| Sulfate | 658 | 30.0 | 200.0 | 429.0 | 115 | 90 | 110 | 0.230 | 20 | S |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: IC2_150820A**

| Sample ID **ICV-150820** | Batch ID: **R81278** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **IC2_150820A** | Analysis Date: **8/20/2015 2:39:42 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 25.6 | 1.00 | 25.00 | 0 | 102 | 90 | 110 | | | |
| Nitrate-N | 12.6 | 0.500 | 12.50 | 0 | 101 | 90 | 110 | | | |
| Sulfate | 76.8 | 3.00 | 75.00 | 0 | 102 | 90 | 110 | | | |

| Sample ID **CCV1-150820** | Batch ID: **R81278** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **IC2_150820A** | Analysis Date: **8/20/2015 6:32:06 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10.4 | 1.00 | 10.00 | 0 | 104 | 90 | 110 | | | |
| Nitrate-N | 4.89 | 0.500 | 5.000 | 0 | 97.8 | 90 | 110 | | | |
| Sulfate | 31.3 | 3.00 | 30.00 | 0 | 104 | 90 | 110 | | | |

| Sample ID **CCV2-150820** | Batch ID: **R81278** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **IC2_150820A** | Analysis Date: **8/20/2015 9:56:09 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 10.3 | 1.00 | 10.00 | 0 | 103 | 90 | 110 | | | |
| Nitrate-N | 4.88 | 0.500 | 5.000 | 0 | 97.7 | 90 | 110 | | | |
| Sulfate | 30.3 | 3.00 | 30.00 | 0 | 101 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: TITRATOR_150824B**

The QC data in batch 71107 applies to the following samples: 1508205-01C, 1508205-02C, 1508205-03C, 1508205-04C

Sample ID **MB-71107** Batch ID: **71107** TestNo: **M2320 B** Units: **mg/L @ pH 4.52**
SampType: **MBLK** Run ID: **TITRATOR_150824B** Analysis Date: **8/24/2015 10:08:00 AM** Prep Date: **8/24/2015**

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

Sample ID **LCS-71107** Batch ID: **71107** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **LCS** Run ID: **TITRATOR_150824B** Analysis Date: **8/24/2015 10:12:00 AM** Prep Date: **8/24/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | 54.1 | 20.0 | 50.00 | 0 | 108 | 74 | 129 | | | |

Sample ID **1508207-04D DUP** Batch ID: **71107** TestNo: **M2320 B** Units: **mg/L @ pH 4.54**
SampType: **DUP** Run ID: **TITRATOR_150824B** Analysis Date: **8/24/2015 12:24:00 PM** Prep Date: **8/24/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 392 | 20.0 | 0 | 393.0 | | | | 0.255 | 20 | |
| Alkalinity, Carbonate (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Total (As CaCO3) | 392 | 20.0 | 0 | 393.0 | | | | 0.255 | 20 | |

Sample ID **1508223-06D DUP** Batch ID: **71107** TestNo: **M2320 B** Units: **mg/L @ pH 4.53**
SampType: **DUP** Run ID: **TITRATOR_150824B** Analysis Date: **8/24/2015 2:37:00 PM** Prep Date: **8/24/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 207 | 20.0 | 0 | 208.3 | | | | 0.529 | 20 | |
| Alkalinity, Carbonate (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Total (As CaCO3) | 207 | 20.0 | 0 | 208.3 | | | | 0.529 | 20 | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: TITRATOR_150824B**

| Sample ID **ICV-150824** | Batch ID: **R81332** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.49** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **TITRATOR_150824B** | Analysis Date: **8/24/2015 10:06:00 AM** | Prep Date: **8/24/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 7.92 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 92.5 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 100 | 20.0 | 100.0 | 0 | 100 | 98 | 102 | | | |

| Sample ID **CCV1-150824** | Batch ID: **R81332** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.53** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **TITRATOR_150824B** | Analysis Date: **8/24/2015 12:31:00 PM** | Prep Date: **8/24/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 22.6 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 77.3 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 99.9 | 20.0 | 100.0 | 0 | 99.9 | 90 | 110 | | | |

| Sample ID **CCV2-150824** | Batch ID: **R81332** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.52** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **TITRATOR_150824B** | Analysis Date: **8/24/2015 3:02:00 PM** | Prep Date: **8/24/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 7.76 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 92.5 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 100 | 20.0 | 100.0 | 0 | 100 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1508205
**Project:** LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: WC_150821B**

The QC data in batch 71082 applies to the following samples: 1508205-01C, 1508205-02C, 1508205-03C, 1508205-04C

| Sample ID | **MB-71082** | Batch ID: | **71082** | TestNo: | **M2540C** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **WC_150821B** | Analysis Date: | **8/24/2015 8:35:00 AM** | Prep Date: | **8/21/2015** |

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

| Sample ID | **LCS-71082** | Batch ID: | **71082** | TestNo: | **M2540C** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **WC_150821B** | Analysis Date: | **8/24/2015 8:35:00 AM** | Prep Date: | **8/21/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 751 | 10.0 | 745.6 | 0 | 101 | 90 | 113 | | | |

| Sample ID | **1508188-05E-DUP** | Batch ID: | **71082** | TestNo: | **M2540C** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **DUP** | Run ID: | **WC_150821B** | Analysis Date: | **8/24/2015 8:35:00 AM** | Prep Date: | **8/21/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 535 | 10.0 | 0 | 517.0 | | | | 3.42 | 5 | |

| Sample ID | **1508188-06E-DUP** | Batch ID: | **71082** | TestNo: | **M2540C** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **DUP** | Run ID: | **WC_150821B** | Analysis Date: | **8/24/2015 8:35:00 AM** | Prep Date: | **8/21/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 502 | 10.0 | 0 | 493.0 | | | | 1.81 | 5 | |

**Qualifiers:**

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

December 11, 2015

Mark Larson
Larson & Associates
507 N. Marienfeld #205
Midland, TX 79701

TEL: (432) 687-0901

FAX (432) 687-0456

Order No.: 1512060

RE: Legacy LMPSU Trash Pit

Dear Mark Larson:

DHL Analytical, Inc. received 4 sample(s) on 12/4/2015 for the analyses presented in the following report.

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

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

Sincerely,

John DuPont
General Manager

This report was performed under the accreditation of the State of Texas Laboratory Certification Number: T104704211-15-15

# Table of Contents

# CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

DATE: 12/3/15 PAGE 1 OF 1

PO #: _____ LAB WORK ORDER #: 1572060

PROJECT LOCATION OR NAME: Legacy Lmpsn Trash Pit

LAI PROJECT #: 14-0107-01 COLLECTOR: Sarah Shiroda

Data Reported to:

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: NM

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

| Field Sample I.D. | Lab # | Date | Time | Matrix | # of Containers | PRESERVATION: HCl | $HNO_3$ | $H_2SO_4$ ☐ NaOH ☐ | ICE | UNPRESERVED | ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TCLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ D.W. 200.8 ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☒ ESS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☒ Sulfate Nitrate Nit, Cat, Mg, Kat | FIELD NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MW-4 | 01 | 12/3/15 | 1:00 | W | 5 | X | X | | X | | X | | | | | | | | | | X | | | | X | X | X | X | |
| MW-3 | 02 | ↓ | 1:30 | ↓ | ↓ | ↓ | ↓ | | ↓ | | ↓ | | | | | | | | | | ↓ | | | | ↓ | ↓ | ↓ | ↓ | |
| MW-1 | 03 | | 1:45 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MW-2 | 04 | ↓ | 2:00 | ↓ | ↓ | | | | | | | | | | | | | | | | | | | | | | | | |
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| TOTAL | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

RELINQUISHED BY:(Signature) Sarah Shiroda DATE/TIME 12/3/15 5:00PM RECEIVED BY: (Signature) FedEx

RELINQUISHED BY:(Signature) FedEx DATE/TIME 12/4/15 10:00 RECEIVED BY: (Signature)

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

**TURN AROUND TIME**

NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

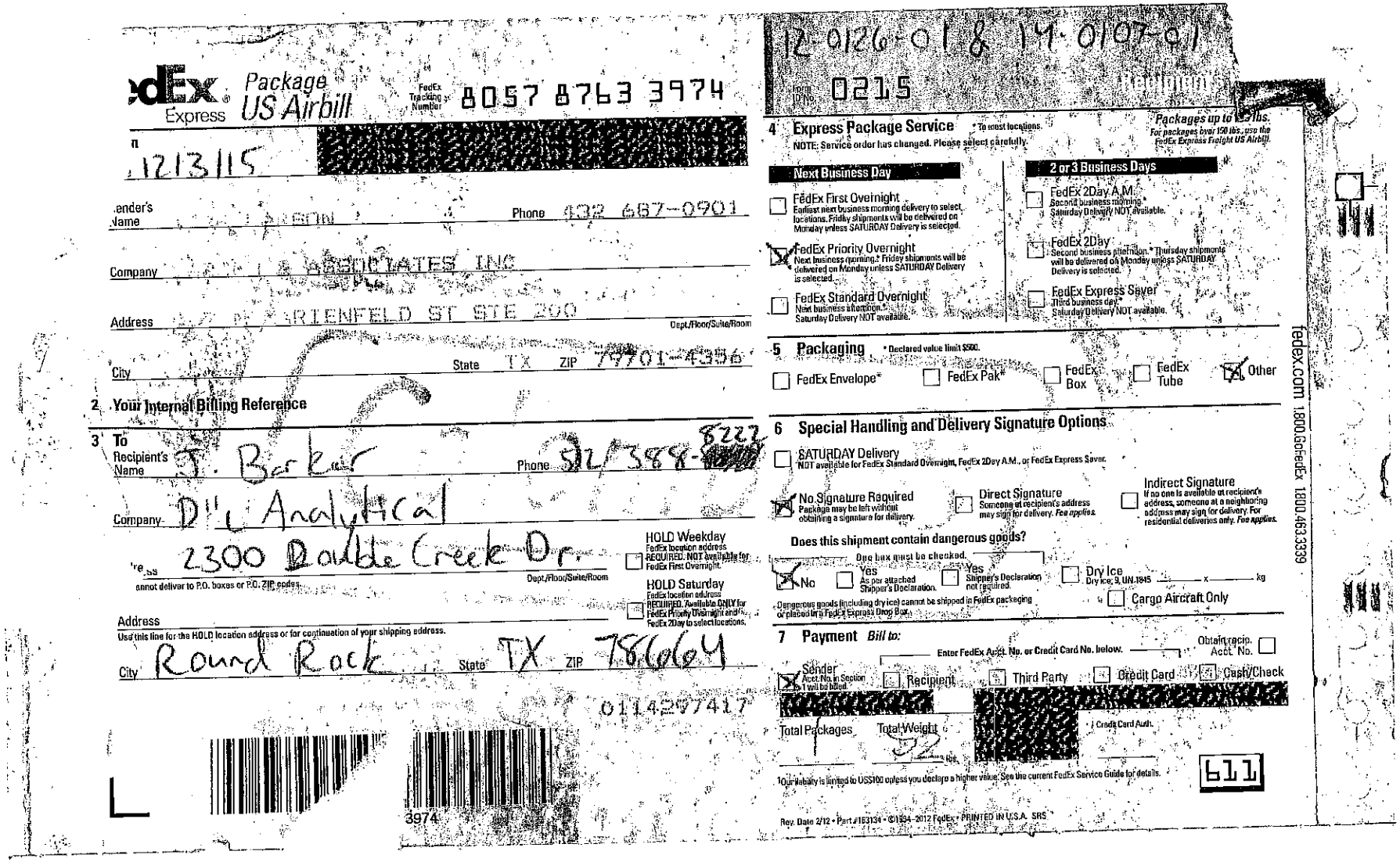
**LABORATORY USE ONLY:**

RECEIVING TEMP: 2.0 THERM #: 78

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☑ NOT USED

☐ CARRIER BILL # FedEx

☐ HAND DELIVERED



FedEx Express Package US Airbill

FedEx Tracking Number 8057 8763 3974

12-0126-01 & 14-0107-01

Form ID No. 0215

1213115

Sender's Name [redacted] Phone 432 687-0901

Company [redacted] RESOURCES INC

Address [redacted] RIENFELD ST STE 200

Dept./Floor/Suite/Room

City [redacted] State TX ZIP 79701-4356

2 Your Internal Billing Reference

3 To

Recipient's Name T. Barker Phone 512 388-[redacted] 8227

Company D'L Analytical

Address 2300 Double Creek Dr.

Dept./Floor/Suite/Room

Cannot deliver to P.O. boxes or P.O. ZIP codes.

HOLD Weekday FedEx location address REQUIRED. NOT available for FedEx First Overnight.

HOLD Saturday FedEx location address REQUIRED. Available ONLY for FedEx Priority Overnight and FedEx 2Day to select locations.

Address Use this line for the HOLD location address or for continuation of your shipping address.

City Round Rock State TX ZIP 78664

0114297417

4 Express Package Service * To most locations.

NOTE: Service order has changed. Please select carefully.

Packages up to 150 lbs. For packages over 150 lbs., use the FedEx Express Freight US Airbill.

Next Business Day

- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations. Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [x] FedEx Priority Overnight — Next business morning.* Friday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Standard Overnight — Next business afternoon.* Saturday Delivery NOT available.

2 or 3 Business Days

- [ ] FedEx 2Day A.M. — Second business morning.* Saturday Delivery NOT available.
- [ ] FedEx 2Day — Second business afternoon.* Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.
- [ ] FedEx Express Saver — Third business day.* Saturday Delivery NOT available.

5 Packaging * Declared value limit $500.

- [ ] FedEx Envelope*
- [ ] FedEx Pak*
- [ ] FedEx Box
- [ ] FedEx Tube
- [x] Other

6 Special Handling and Delivery Signature Options

- [ ] SATURDAY Delivery — NOT available for FedEx Standard Overnight, FedEx 2Day A.M., or FedEx Express Saver.

No Signature Required — Package may be left without obtaining a signature for delivery. [x]

Direct Signature — Someone at recipient's address may sign for delivery. Fee applies. [ ]

Indirect Signature — If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies. [ ]

Does this shipment contain dangerous goods? One box must be checked.

- [x] No
- [ ] Yes — As per attached Shipper's Declaration.
- [ ] Yes — Shipper's Declaration not required.
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg
- [ ] Cargo Aircraft Only

Dangerous goods (including dry ice) cannot be shipped in FedEx packaging or placed in a FedEx Express Drop Box.

7 Payment Bill to: Enter FedEx Acct. No. or Credit Card No. below. Obtain recip. Acct. No. [ ]

- [x] Sender — Acct. No. in Section 1 will be billed
- [ ] Recipient
- [ ] Third Party
- [ ] Credit Card
- [ ] Cash/Check

[redacted]

Total Packages 1 Total Weight 2 lbs. Credit Card Auth.

611

1Our liability is limited to US$100 unless you declare a higher value. See the current FedEx Service Guide for details.

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fedex.com 1.800.GoFedEx 1.800.463.3339

3974

DHL Analytical, Inc.

## Sample Receipt Checklist

Client Name **Larson & Associates**

Date Received: **12/4/2015**

Work Order Number **1512060**

Received by **MB**

Checklist completed by: _____ 12/4/2015
Signature | Date

Reviewed by: PL 12/4/2015
Initials | Date

Carrier name FedEx 1day

| | | | |
|---|---|---|---|
| Shipping container/cooler in good condition? | Yes ☑ | No ☐ | Not Present ☐ |
| Custody seals intact on shippping container/cooler? | Yes ☐ | No ☐ | Not Present ☑ |
| Custody seals intact on sample bottles? | Yes ☐ | No ☐ | Not Present ☑ |
| Chain of custody present? | Yes ☑ | No ☐ | |
| Chain of custody signed when relinquished and received? | Yes ☑ | No ☐ | |
| Chain of custody agrees with sample labels? | Yes ☑ | No ☐ | |
| Samples in proper container/bottle? | Yes ☑ | No ☐ | |
| Sample containers intact? | Yes ☑ | No ☐ | |
| Sufficient sample volume for indicated test? | Yes ☑ | No ☐ | |
| All samples received within holding time? | Yes ☑ | No ☐ | |
| Container/Temp Blank temperature in compliance? | Yes ☑ | No ☐ | 2.0 °C |
| Water - VOA vials have zero headspace? | Yes ☑ | No ☐ | No VOA vials submitted ☐ |
| Water - pH<2 acceptable upon receipt? | Yes ☑ | No ☐ | NA ☐ LOT # 8086 |
| | Adjusted? NO | | Checked by |
| Water - ph>9 (S) or ph>12 (CN) acceptable upon receipt? | Yes ☐ | No ☐ | NA ☑ LOT # |
| | Adjusted? | | Checked by |

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

Client contacted _____ Date contacted: _____ Person contacted _____

Contacted by: _____ Regarding _____

Comments: _____

Corrective Action _____

Page 1 of 1

**DHL Analytical, Inc.** **Date:** *11-Dec-15*

**CLIENT:** Larson & Associates
**Project:** Legacy LMPSU Trash Pit
**Lab Order:** 1512060

# CASE NARRATIVE

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

Method SW6020A - Metals Analysis
Method SW8021B - Volatile Organics by GC Analysis
Method E300 - Anions Analysis
Method M2540C - Total Dissolved Solids Analysis
Method M2320 B - Alkalinity Analysis

## LOG IN

The samples were received and log-in performed on 12/4/2015. A total of 4 samples were received and analyzed. The samples arrived in good condition and were properly packaged. The samples were collected in Mountain Standard Time.

## ANIONS ANALYSIS

For Anions Analysis, the recovery of Nitrate-N for the Matrix Spike (1512042-02 MS) was marginally above the method control limits. This is flagged accordingly in the QC Summary Report. This anion was within method control limits in the associated LCS/MSD. No further corrective action was taken.

## METALS ANALYSIS

For Metals Analysis, the recoveries of up to three analytes for the Matrix Spike and Matrix Spike Duplicate (1512060-01 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. No further corrective action was taken.

For Metals Analysis, the recovery of Sodium for the Low Level Calibration Verification (LCVL1-151208) was slightly above the method control limits. The concentration of this analyte is similar to the CCV spike levels. This analyte meets method control limits in the associated bracketing QC. No further corrective action was taken.

## DHL Analytical, Inc.

**Date:** *11-Dec-15*

**CLIENT:** Larson & Associates
**Project:** Legacy LMPSU Trash Pit
**Lab Order:** 1512060

# Work Order Sample Summary

| Lab Smp ID | Client Sample ID | Tag Number | Date Collected | Date Recved |
|---|---|---|---|---|
| 1512060-01 | MW-4 | | 12/03/15 01:00 PM | 12/4/2015 |
| 1512060-02 | MW-3 | | 12/03/15 01:30 PM | 12/4/2015 |
| 1512060-03 | MW-1 | | 12/03/15 01:45 PM | 12/4/2015 |
| 1512060-04 | MW-2 | | 12/03/15 02:00 PM | 12/4/2015 |

**Lab Order:** 1512060
**Client:** Larson & Associates
**Project:** Legacy LMPSU Trash Pit

# PREP DATES REPORT

| Sample ID | Client Sample ID | Collection Date | Matrix | Test Number | Test Name | Prep Date | Batch ID |
|---|---|---|---|---|---|---|---|
| 1512060-01A | MW-4 | 12/03/15 01:00 PM | Aqueous | SW5030C | Purge and Trap Water GC | 12/08/15 08:15 AM | 72597 |
| 1512060-01B | MW-4 | 12/03/15 01:00 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| | MW-4 | 12/03/15 01:00 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| 1512060-01C | MW-4 | 12/03/15 01:00 PM | Aqueous | M2320 B | Alkalinity Preparation | 12/09/15 08:34 AM | 72624 |
| | MW-4 | 12/03/15 01:00 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-4 | 12/03/15 01:00 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-4 | 12/03/15 01:00 PM | Aqueous | M2540C | TDS Preparation | 12/08/15 01:47 PM | 72614 |
| 1512060-02A | MW-3 | 12/03/15 01:30 PM | Aqueous | SW5030C | Purge and Trap Water GC | 12/08/15 08:15 AM | 72597 |
| 1512060-02B | MW-3 | 12/03/15 01:30 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| | MW-3 | 12/03/15 01:30 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| 1512060-02C | MW-3 | 12/03/15 01:30 PM | Aqueous | M2320 B | Alkalinity Preparation | 12/09/15 08:34 AM | 72624 |
| | MW-3 | 12/03/15 01:30 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-3 | 12/03/15 01:30 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-3 | 12/03/15 01:30 PM | Aqueous | M2540C | TDS Preparation | 12/08/15 01:47 PM | 72614 |
| 1512060-03A | MW-1 | 12/03/15 01:45 PM | Aqueous | SW5030C | Purge and Trap Water GC | 12/08/15 08:15 AM | 72597 |
| 1512060-03B | MW-1 | 12/03/15 01:45 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| | MW-1 | 12/03/15 01:45 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| 1512060-03C | MW-1 | 12/03/15 01:45 PM | Aqueous | M2320 B | Alkalinity Preparation | 12/09/15 08:34 AM | 72624 |
| | MW-1 | 12/03/15 01:45 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-1 | 12/03/15 01:45 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-1 | 12/03/15 01:45 PM | Aqueous | M2540C | TDS Preparation | 12/08/15 01:47 PM | 72614 |
| 1512060-04A | MW-2 | 12/03/15 02:00 PM | Aqueous | SW5030C | Purge and Trap Water GC | 12/08/15 08:15 AM | 72597 |
| 1512060-04B | MW-2 | 12/03/15 02:00 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| | MW-2 | 12/03/15 02:00 PM | Aqueous | SW3005A | Aq Prep Metals : ICP-MS | 12/07/15 08:51 AM | 72574 |
| 1512060-04C | MW-2 | 12/03/15 02:00 PM | Aqueous | M2320 B | Alkalinity Preparation | 12/09/15 08:34 AM | 72624 |
| | MW-2 | 12/03/15 02:00 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-2 | 12/03/15 02:00 PM | Aqueous | E300 | Anion Preparation | 12/04/15 12:50 PM | 72553 |
| | MW-2 | 12/03/15 02:00 PM | Aqueous | M2540C | TDS Preparation | 12/08/15 01:47 PM | 72614 |

**Lab Order:** 1512060
**Client:** Larson & Associates
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL DATES REPORT

| Sample ID | Client Sample ID | Matrix | Test Number | Test Name | Batch ID | Dilution | Analysis Date | Run ID |
|---|---|---|---|---|---|---|---|---|
| 1512060-01A | MW-4 | Aqueous | SW8021B | Volatile Organics by GC | 72597 | 1 | 12/08/15 01:51 PM | GC8_151208B |
| 1512060-01B | MW-4 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 100 | 12/08/15 01:08 PM | ICP-MS4_151208A |
| | MW-4 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 1 | 12/08/15 01:47 PM | ICP-MS4_151208A |
| 1512060-01C | MW-4 | Aqueous | M2320 B | Alkalinity | 72624 | 1 | 12/09/15 11:24 AM | TITRATOR_151209B |
| | MW-4 | Aqueous | E300 | Anions by IC method - Water | 72553 | 1 | 12/04/15 01:22 PM | IC2_151204A |
| | MW-4 | Aqueous | E300 | Anions by IC method - Water | 72553 | 10 | 12/04/15 02:37 PM | IC2_151204A |
| | MW-4 | Aqueous | M2540C | Total Dissolved Solids | 72614 | 1 | 12/09/15 08:00 AM | WC_151208C |
| 1512060-02A | MW-3 | Aqueous | SW8021B | Volatile Organics by GC | 72597 | 1 | 12/08/15 02:14 PM | GC8_151208B |
| 1512060-02B | MW-3 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 50 | 12/08/15 01:14 PM | ICP-MS4_151208A |
| | MW-3 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 1 | 12/09/15 10:55 AM | ICP-MS4_151209A |
| 1512060-02C | MW-3 | Aqueous | M2320 B | Alkalinity | 72624 | 1 | 12/09/15 11:31 AM | TITRATOR_151209B |
| | MW-3 | Aqueous | E300 | Anions by IC method - Water | 72553 | 10 | 12/04/15 02:52 PM | IC2_151204A |
| | MW-3 | Aqueous | E300 | Anions by IC method - Water | 72553 | 1 | 12/04/15 01:36 PM | IC2_151204A |
| | MW-3 | Aqueous | M2540C | Total Dissolved Solids | 72614 | 1 | 12/09/15 08:00 AM | WC_151208C |
| 1512060-03A | MW-1 | Aqueous | SW8021B | Volatile Organics by GC | 72597 | 1 | 12/08/15 02:36 PM | GC8_151208B |
| 1512060-03B | MW-1 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 100 | 12/08/15 01:16 PM | ICP-MS4_151208A |
| | MW-1 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 1 | 12/08/15 02:01 PM | ICP-MS4_151208A |
| 1512060-03C | MW-1 | Aqueous | M2320 B | Alkalinity | 72624 | 1 | 12/09/15 11:50 AM | TITRATOR_151209B |
| | MW-1 | Aqueous | E300 | Anions by IC method - Water | 72553 | 1 | 12/04/15 01:51 PM | IC2_151204A |
| | MW-1 | Aqueous | E300 | Anions by IC method - Water | 72553 | 100 | 12/04/15 03:06 PM | IC2_151204A |
| | MW-1 | Aqueous | M2540C | Total Dissolved Solids | 72614 | 1 | 12/09/15 08:00 AM | WC_151208C |
| 1512060-04A | MW-2 | Aqueous | SW8021B | Volatile Organics by GC | 72597 | 1 | 12/08/15 02:59 PM | GC8_151208B |
| 1512060-04B | MW-2 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 50 | 12/08/15 01:18 PM | ICP-MS4_151208A |
| | MW-2 | Aqueous | SW6020A | Trace Metals: ICP-MS - Water | 72574 | 1 | 12/09/15 10:57 AM | ICP-MS4_151209A |
| 1512060-04C | MW-2 | Aqueous | M2320 B | Alkalinity | 72624 | 1 | 12/09/15 11:56 AM | TITRATOR_151209B |
| | MW-2 | Aqueous | E300 | Anions by IC method - Water | 72553 | 1 | 12/04/15 02:06 PM | IC2_151204A |
| | MW-2 | Aqueous | E300 | Anions by IC method - Water | 72553 | 10 | 12/04/15 03:21 PM | IC2_151204A |
| | MW-2 | Aqueous | M2540C | Total Dissolved Solids | 72614 | 1 | 12/09/15 08:00 AM | WC_151208C |

# DHL Analytical, Inc.

**Date:** *11-Dec-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-4 |
| **Project:** | Legacy LMPSU Trash Pit | **Lab ID:** | 1512060-01 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 12/03/15 01:00 PM |
| **Lab Order:** | 1512060 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 12/08/15 01:51 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 01:51 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 01:51 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 12/08/15 01:51 PM |
| Surr: a,a,a-Trifluorotoluene | 95.8 | 0 | 87-113 | | %REC | 1 | 12/08/15 01:51 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 93.5 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:08 PM |
| Magnesium | 54.7 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:08 PM |
| Potassium | 8.91 | 0.100 | 0.300 | | mg/L | 1 | 12/08/15 01:47 PM |
| Sodium | 190 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:08 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 218 | 3.00 | 10.0 | | mg/L | 10 | 12/04/15 02:37 PM |
| Nitrate-N | 1.19 | 0.100 | 0.500 | | mg/L | 1 | 12/04/15 01:22 PM |
| Sulfate | 239 | 10.0 | 30.0 | | mg/L | 10 | 12/04/15 02:37 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 266 | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:24 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:24 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:24 AM |
| Alkalinity, Total (As CaCO3) | 266 | 20.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:24 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **BJT** |
| Total Dissolved Solids (Residue, Filterable) | 1050 | 50.0 | 50.0 | | mg/L | 1 | 12/09/15 08:00 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *11-Dec-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-3 |
| **Project:** | Legacy LMPSU Trash Pit | **Lab ID:** | 1512060-02 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 12/03/15 01:30 PM |
| **Lab Order:** | 1512060 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 12/08/15 02:14 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:14 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:14 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 12/08/15 02:14 PM |
| Surr: a,a,a-Trifluorotoluene | 94.9 | 0 | 87-113 | | %REC | 1 | 12/08/15 02:14 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 221 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:14 PM |
| Magnesium | 51.9 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:14 PM |
| Potassium | 8.48 | 0.100 | 0.300 | | mg/L | 1 | 12/09/15 10:55 AM |
| Sodium | 284 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:14 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 350 | 3.00 | 10.0 | | mg/L | 10 | 12/04/15 02:52 PM |
| Nitrate-N | 1.19 | 0.100 | 0.500 | | mg/L | 1 | 12/04/15 01:36 PM |
| Sulfate | 222 | 10.0 | 30.0 | | mg/L | 10 | 12/04/15 02:52 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 232 | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:31 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:31 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:31 AM |
| Alkalinity, Total (As CaCO3) | 232 | 20.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:31 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **BJT** |
| Total Dissolved Solids (Residue, Filterable) | 1260 | 50.0 | 50.0 | | mg/L | 1 | 12/09/15 08:00 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *11-Dec-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-1 |
| **Project:** | Legacy LMPSU Trash Pit | **Lab ID:** | 1512060-03 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 12/03/15 01:45 PM |
| **Lab Order:** | 1512060 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 12/08/15 02:36 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:36 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:36 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 12/08/15 02:36 PM |
| Surr: a,a,a-Trifluorotoluene | 94.5 | 0 | 87-113 | | %REC | 1 | 12/08/15 02:36 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 310 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:16 PM |
| Magnesium | 258 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:16 PM |
| Potassium | 22.6 | 0.100 | 0.300 | | mg/L | 1 | 12/08/15 02:01 PM |
| Sodium | 930 | 10.0 | 30.0 | | mg/L | 100 | 12/08/15 01:16 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 1820 | 30.0 | 100 | | mg/L | 100 | 12/04/15 03:06 PM |
| Nitrate-N | ND | 0.100 | 0.500 | | mg/L | 1 | 12/04/15 01:51 PM |
| Sulfate | 431 | 100 | 300 | | mg/L | 100 | 12/04/15 03:06 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 727 | 10.0 | 20.0 | | mg/L @ pH 4.54 | 1 | 12/09/15 11:50 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.54 | 1 | 12/09/15 11:50 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.54 | 1 | 12/09/15 11:50 AM |
| Alkalinity, Total (As CaCO3) | 727 | 20.0 | 20.0 | | mg/L @ pH 4.54 | 1 | 12/09/15 11:50 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **BJT** |
| Total Dissolved Solids (Residue, Filterable) | 4230 | 50.0 | 50.0 | | mg/L | 1 | 12/09/15 08:00 AM |

**Qualifiers:**

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

# DHL Analytical, Inc.

**Date:** *11-Dec-15*

| | | | |
|---|---|---|---|
| **CLIENT:** | Larson & Associates | **Client Sample ID:** | MW-2 |
| **Project:** | Legacy LMPSU Trash Pit | **Lab ID:** | 1512060-04 |
| **Project No:** | 14-0107-01 | **Collection Date:** | 12/03/15 02:00 PM |
| **Lab Order:** | 1512060 | **Matrix:** | AQUEOUS |

| Analyses | Result | MDL | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **VOLATILE ORGANICS BY GC** | | **SW8021B** | | | | | Analyst: **LM** |
| Benzene | ND | 0.000800 | 0.00200 | | mg/L | 1 | 12/08/15 02:59 PM |
| Ethylbenzene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:59 PM |
| Toluene | ND | 0.00200 | 0.00600 | | mg/L | 1 | 12/08/15 02:59 PM |
| Xylenes, Total | ND | 0.00300 | 0.00900 | | mg/L | 1 | 12/08/15 02:59 PM |
| Surr: a,a,a-Trifluorotoluene | 94.4 | 0 | 87-113 | | %REC | 1 | 12/08/15 02:59 PM |
| **TRACE METALS: ICP-MS - WATER** | | **SW6020A** | | | | | Analyst: **RO** |
| Calcium | 214 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:18 PM |
| Magnesium | 31.8 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:18 PM |
| Potassium | 6.22 | 0.100 | 0.300 | | mg/L | 1 | 12/09/15 10:57 AM |
| Sodium | 106 | 5.00 | 15.0 | | mg/L | 50 | 12/08/15 01:18 PM |
| **ANIONS BY IC METHOD - WATER** | | **E300** | | | | | Analyst: **AV** |
| Chloride | 67.0 | 3.00 | 10.0 | | mg/L | 10 | 12/04/15 03:21 PM |
| Nitrate-N | 1.23 | 0.100 | 0.500 | | mg/L | 1 | 12/04/15 02:06 PM |
| Sulfate | 112 | 1.00 | 3.00 | | mg/L | 1 | 12/04/15 02:06 PM |
| **ALKALINITY** | | **M2320 B** | | | | | Analyst: **LM** |
| Alkalinity, Bicarbonate (As CaCO3) | 247 | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:56 AM |
| Alkalinity, Carbonate (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:56 AM |
| Alkalinity, Hydroxide (As CaCO3) | ND | 10.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:56 AM |
| Alkalinity, Total (As CaCO3) | 247 | 20.0 | 20.0 | | mg/L @ pH 4.52 | 1 | 12/09/15 11:56 AM |
| **TOTAL DISSOLVED SOLIDS** | | **M2540C** | | | | | Analyst: **BJT** |
| Total Dissolved Solids (Residue, Filterable) | 582 | 10.0 | 10.0 | | mg/L | 1 | 12/09/15 08:00 AM |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: GC8_151208B**

The QC data in batch 72597 applies to the following samples: 1512060-01A, 1512060-02A, 1512060-03A, 1512060-04A

Sample ID **LCS-72597** Batch ID: **72597** TestNo: **SW8021B** Units: **mg/L**
SampType: **LCS** Run ID: **GC8_151208B** Analysis Date: **12/8/2015 10:05:29 AM** Prep Date: **12/8/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0495 | 0.00200 | 0.0464 | 0 | 107 | 81 | 125 | | | |
| Toluene | 0.0490 | 0.00600 | 0.0464 | 0 | 106 | 84 | 123 | | | |
| Ethylbenzene | 0.0497 | 0.00600 | 0.0464 | 0 | 107 | 83 | 119 | | | |
| Xylenes, Total | 0.148 | 0.00900 | 0.139 | 0 | 107 | 81 | 117 | | | |
| Surr: a,a,a-Trifluorotoluene | 196 | | 200.0 | | 98.0 | 87 | 113 | | | |

Sample ID **MB-72597** Batch ID: **72597** TestNo: **SW8021B** Units: **mg/L**
SampType: **MBLK** Run ID: **GC8_151208B** Analysis Date: **12/8/2015 10:50:37 AM** Prep Date: **12/8/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | ND | 0.00200 | | | | | | | | |
| Toluene | ND | 0.00600 | | | | | | | | |
| Ethylbenzene | ND | 0.00600 | | | | | | | | |
| Xylenes, Total | ND | 0.00900 | | | | | | | | |
| Surr: a,a,a-Trifluorotoluene | 192 | | 200.0 | | 95.8 | 87 | 113 | | | |

Sample ID **1512048-02AMS** Batch ID: **72597** TestNo: **SW8021B** Units: **mg/L**
SampType: **MS** Run ID: **GC8_151208B** Analysis Date: **12/8/2015 4:52:39 PM** Prep Date: **12/8/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0521 | 0.00200 | 0.0464 | 0.00266 | 107 | 81 | 125 | | | |
| Toluene | 0.0505 | 0.00600 | 0.0464 | 0 | 109 | 84 | 123 | | | |
| Ethylbenzene | 0.0518 | 0.00600 | 0.0464 | 0.00251 | 106 | 83 | 119 | | | |
| Xylenes, Total | 0.157 | 0.00900 | 0.139 | 0.00688 | 108 | 81 | 117 | | | |
| Surr: a,a,a-Trifluorotoluene | 188 | | 200.0 | | 94.0 | 87 | 113 | | | |

Sample ID **1512048-02AMSD** Batch ID: **72597** TestNo: **SW8021B** Units: **mg/L**
SampType: **MSD** Run ID: **GC8_151208B** Analysis Date: **12/8/2015 5:15:11 PM** Prep Date: **12/8/2015**

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0526 | 0.00200 | 0.0464 | 0.00266 | 108 | 81 | 125 | 0.799 | 20 | |
| Toluene | 0.0501 | 0.00600 | 0.0464 | 0 | 108 | 84 | 123 | 0.764 | 20 | |
| Ethylbenzene | 0.0525 | 0.00600 | 0.0464 | 0.00251 | 108 | 83 | 119 | 1.51 | 20 | |
| Xylenes, Total | 0.158 | 0.00900 | 0.139 | 0.00688 | 108 | 81 | 117 | 0.487 | 20 | |
| Surr: a,a,a-Trifluorotoluene | 187 | | 200.0 | | 93.4 | 87 | 113 | 0 | 0 | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: GC8_151208B**

| Sample ID **ICV-151208** | Batch ID: **R83009** | TestNo: **SW8021B** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **GC8_151208B** | Analysis Date: **12/8/2015 9:20:08 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0951 | 0.00200 | 0.0928 | 0 | 102 | 80 | 120 | | | |
| Toluene | 0.0948 | 0.00600 | 0.0928 | 0 | 102 | 80 | 120 | | | |
| Ethylbenzene | 0.0968 | 0.00600 | 0.0928 | 0 | 104 | 80 | 120 | | | |
| Xylenes, Total | 0.286 | 0.00900 | 0.278 | 0 | 103 | 80 | 120 | | | |
| Surr: a,a,a-Trifluorotoluene | 196 | | 200.0 | | 98.2 | 87 | 113 | | | |

| Sample ID **CCV1-151208** | Batch ID: **R83009** | TestNo: **SW8021B** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GC8_151208B** | Analysis Date: **12/8/2015 3:44:47 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0492 | 0.00200 | 0.0464 | 0 | 106 | 80 | 120 | | | |
| Toluene | 0.0483 | 0.00600 | 0.0464 | 0 | 104 | 80 | 120 | | | |
| Ethylbenzene | 0.0488 | 0.00600 | 0.0464 | 0 | 105 | 80 | 120 | | | |
| Xylenes, Total | 0.146 | 0.00900 | 0.139 | 0 | 105 | 80 | 120 | | | |
| Surr: a,a,a-Trifluorotoluene | 190 | | 200.0 | | 95.2 | 87 | 113 | | | |

| Sample ID **CCV2-151208** | Batch ID: **R83009** | TestNo: **SW8021B** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **GC8_151208B** | Analysis Date: **12/8/2015 6:00:21 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Benzene | 0.0486 | 0.00200 | 0.0464 | 0 | 105 | 80 | 120 | | | |
| Toluene | 0.0477 | 0.00600 | 0.0464 | 0 | 103 | 80 | 120 | | | |
| Ethylbenzene | 0.0484 | 0.00600 | 0.0464 | 0 | 104 | 80 | 120 | | | |
| Xylenes, Total | 0.144 | 0.00900 | 0.139 | 0 | 104 | 80 | 120 | | | |
| Surr: a,a,a-Trifluorotoluene | 189 | | 200.0 | | 94.6 | 87 | 113 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_151208A**

The QC data in batch 72574 applies to the following samples: 1512060-01B, 1512060-02B, 1512060-03B, 1512060-04B

| Sample ID | **MB-72574** | Batch ID: | **72574** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **ICP-MS4_151208A** | Analysis Date: | **12/8/2015 1:01:00 PM** | Prep Date: | **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | ND | 0.300 | | | | | | | | |
| Magnesium | ND | 0.300 | | | | | | | | |
| Potassium | ND | 0.300 | | | | | | | | |
| Sodium | ND | 0.300 | | | | | | | | |

| Sample ID | **LCS-72574** | Batch ID: | **72574** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **ICP-MS4_151208A** | Analysis Date: | **12/8/2015 1:03:00 PM** | Prep Date: | **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.55 | 0.300 | 5.00 | 0 | 91.0 | 80 | 120 | | | |
| Magnesium | 4.81 | 0.300 | 5.00 | 0 | 96.1 | 80 | 120 | | | |
| Potassium | 4.85 | 0.300 | 5.00 | 0 | 97.1 | 80 | 120 | | | |
| Sodium | 4.90 | 0.300 | 5.00 | 0 | 97.9 | 80 | 120 | | | |

| Sample ID | **LCSD-72574** | Batch ID: | **72574** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCSD** | Run ID: | **ICP-MS4_151208A** | Analysis Date: | **12/8/2015 1:04:00 PM** | Prep Date: | **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.60 | 0.300 | 5.00 | 0 | 92.1 | 80 | 120 | 1.24 | 15 | |
| Magnesium | 4.86 | 0.300 | 5.00 | 0 | 97.1 | 80 | 120 | 1.04 | 15 | |
| Potassium | 4.93 | 0.300 | 5.00 | 0 | 98.5 | 80 | 120 | 1.46 | 15 | |
| Sodium | 4.95 | 0.300 | 5.00 | 0 | 99.0 | 80 | 120 | 1.04 | 15 | |

| Sample ID | **1512060-01B SD** | Batch ID: | **72574** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **SD** | Run ID: | **ICP-MS4_151208A** | Analysis Date: | **12/8/2015 1:10:00 PM** | Prep Date: | **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 98.3 | 150 | 0 | 93.6 | | | | 4.97 | 10 | |
| Magnesium | 57.2 | 150 | 0 | 54.7 | | | | 4.42 | 10 | |
| Sodium | 203 | 150 | 0 | 190 | | | | 6.83 | 10 | |

| Sample ID | **1512060-01B PDS** | Batch ID: | **72574** | TestNo: | **SW6020A** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **PDS** | Run ID: | **ICP-MS4_151208A** | Analysis Date: | **12/8/2015 1:30:00 PM** | Prep Date: | **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 557 | 30.0 | 500 | 93.5 | 92.8 | 80 | 120 | | | |
| Magnesium | 558 | 30.0 | 500 | 54.7 | 101 | 80 | 120 | | | |
| Sodium | 694 | 30.0 | 500 | 190 | 101 | 80 | 120 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_151208A**

| Sample ID **1512060-01B MS** | Batch ID: **72574** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MS** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 1:32:00 PM** | Prep Date: **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 96.1 | 0.300 | 5.00 | 92.8 | 65.6 | 80 | 120 | | | S |
| Magnesium | 56.4 | 0.300 | 5.00 | 53.2 | 64.3 | 80 | 120 | | | S |
| Potassium | 13.5 | 0.300 | 5.00 | 8.91 | 92.5 | 80 | 120 | | | |
| Sodium | 175 | 0.300 | 5.00 | 176 | -13.6 | 80 | 120 | | | S |

| Sample ID **1512060-01B MSD** | Batch ID: **72574** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MSD** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 1:34:00 PM** | Prep Date: **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 95.2 | 0.300 | 5.00 | 92.8 | 48.9 | 80 | 120 | 0.873 | 15 | S |
| Magnesium | 55.8 | 0.300 | 5.00 | 53.2 | 51.7 | 80 | 120 | 1.12 | 15 | S |
| Potassium | 13.4 | 0.300 | 5.00 | 8.91 | 89.0 | 80 | 120 | 1.29 | 15 | |
| Sodium | 172 | 0.300 | 5.00 | 176 | -73.2 | 80 | 120 | 1.71 | 15 | S |

| Sample ID **1512060-01B SD** | Batch ID: **72574** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **SD** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 1:49:00 PM** | Prep Date: **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 9.13 | 1.50 | 0 | 8.91 | | | | 2.54 | 10 | |

| Sample ID **1512060-01B PDS** | Batch ID: **72574** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **PDS** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 2:04:00 PM** | Prep Date: **12/7/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 13.2 | 0.300 | 5.00 | 8.91 | 86.1 | 80 | 120 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_151208A**

| Sample ID **ICV-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 12:05:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 2.39 | 0.300 | 2.50 | 0 | 95.7 | 90 | 110 | | | |
| Magnesium | 2.63 | 0.300 | 2.50 | 0 | 105 | 90 | 110 | | | |
| Potassium | 2.58 | 0.300 | 2.50 | 0 | 103 | 90 | 110 | | | |
| Sodium | 2.58 | 0.300 | 2.50 | 0 | 103 | 90 | 110 | | | |

| Sample ID **LCVL-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 12:13:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.102 | 0.300 | 0.100 | 0 | 102 | 70 | 130 | | | |
| Magnesium | 0.105 | 0.300 | 0.100 | 0 | 105 | 70 | 130 | | | |
| Potassium | 0.109 | 0.300 | 0.100 | 0 | 109 | 70 | 130 | | | |
| Sodium | 0.122 | 0.300 | 0.100 | 0 | 122 | 70 | 130 | | | |

| Sample ID **CCV1-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 12:52:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.95 | 0.300 | 5.00 | 0 | 98.9 | 90 | 110 | | | |
| Magnesium | 5.14 | 0.300 | 5.00 | 0 | 103 | 90 | 110 | | | |
| Potassium | 5.23 | 0.300 | 5.00 | 0 | 105 | 90 | 110 | | | |
| Sodium | 5.24 | 0.300 | 5.00 | 0 | 105 | 90 | 110 | | | |

| Sample ID **LCVL1-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 12:56:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.106 | 0.300 | 0.100 | 0 | 106 | 70 | 130 | | | |
| Magnesium | 0.105 | 0.300 | 0.100 | 0 | 105 | 70 | 130 | | | |
| Potassium | 0.106 | 0.300 | 0.100 | 0 | 106 | 70 | 130 | | | |
| Sodium | 0.133 | 0.300 | 0.100 | 0 | 133 | 70 | 130 | | | S |

| Sample ID **CCV2-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 1:36:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 4.93 | 0.300 | 5.00 | 0 | 98.7 | 90 | 110 | | | |
| Magnesium | 5.22 | 0.300 | 5.00 | 0 | 104 | 90 | 110 | | | |
| Potassium | 5.26 | 0.300 | 5.00 | 0 | 105 | 90 | 110 | | | |
| Sodium | 5.31 | 0.300 | 5.00 | 0 | 106 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_151208A**

| Sample ID **LCVL2-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 1:43:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Calcium | 0.101 | 0.300 | 0.100 | 0 | 101 | 70 | 130 | | | |
| Magnesium | 0.106 | 0.300 | 0.100 | 0 | 106 | 70 | 130 | | | |
| Potassium | 0.105 | 0.300 | 0.100 | 0 | 105 | 70 | 130 | | | |
| Sodium | 0.129 | 0.300 | 0.100 | 0 | 129 | 70 | 130 | | | |

| Sample ID **CCV3-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 2:06:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 5.30 | 0.300 | 5.00 | 0 | 106 | 90 | 110 | | | |

| Sample ID **LCVL3-151208** | Batch ID: **R82993** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151208A** | Analysis Date: **12/8/2015 2:26:00 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 0.108 | 0.300 | 0.100 | 0 | 108 | 70 | 130 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: ICP-MS4_151209A**

| Sample ID **ICV-151209** | Batch ID: **R83020** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **ICP-MS4_151209A** | Analysis Date: **12/9/2015 10:33:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 2.51 | 0.300 | 2.50 | 0 | 100 | 90 | 110 | | | |

| Sample ID **LCVL-151209** | Batch ID: **R83020** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151209A** | Analysis Date: **12/9/2015 10:38:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 0.105 | 0.300 | 0.100 | 0 | 105 | 70 | 130 | | | |

| Sample ID **CCV1-151209** | Batch ID: **R83020** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **ICP-MS4_151209A** | Analysis Date: **12/9/2015 11:21:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 5.05 | 0.300 | 5.00 | 0 | 101 | 90 | 110 | | | |

| Sample ID **LCVL1-151209** | Batch ID: **R83020** | TestNo: **SW6020A** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCVL** | Run ID: **ICP-MS4_151209A** | Analysis Date: **12/9/2015 11:45:00 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Potassium | 0.107 | 0.300 | 0.100 | 0 | 107 | 70 | 130 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: IC2_151204A**

The QC data in batch 72553 applies to the following samples: 1512060-01C, 1512060-02C, 1512060-03C, 1512060-04C

| Sample ID | **LCS-72553** | Batch ID: | **72553** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCS** | Run ID: | **IC2_151204A** | Analysis Date: | **12/4/2015 9:33:53 AM** | Prep Date: | **12/4/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.81 | 1.00 | 10.00 | 0 | 98.1 | 90 | 110 | | | |
| Nitrate-N | 5.45 | 0.500 | 5.000 | 0 | 109 | 90 | 110 | | | |
| Sulfate | 29.8 | 3.00 | 30.00 | 0 | 99.4 | 90 | 110 | | | |

| Sample ID | **LCSD-72553** | Batch ID: | **72553** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **LCSD** | Run ID: | **IC2_151204A** | Analysis Date: | **12/4/2015 9:48:29 AM** | Prep Date: | **12/4/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.82 | 1.00 | 10.00 | 0 | 98.2 | 90 | 110 | 0.144 | 20 | |
| Nitrate-N | 5.43 | 0.500 | 5.000 | 0 | 109 | 90 | 110 | 0.275 | 20 | |
| Sulfate | 29.9 | 3.00 | 30.00 | 0 | 99.5 | 90 | 110 | 0.186 | 20 | |

| Sample ID | **MB-72553** | Batch ID: | **72553** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MBLK** | Run ID: | **IC2_151204A** | Analysis Date: | **12/4/2015 10:03:05 AM** | Prep Date: | **12/4/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 1.00 | | | | | | | | |
| Nitrate-N | ND | 0.500 | | | | | | | | |
| Sulfate | ND | 3.00 | | | | | | | | |

| Sample ID | **1512042-02AMS** | Batch ID: | **72553** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MS** | Run ID: | **IC2_151204A** | Analysis Date: | **12/4/2015 11:10:15 AM** | Prep Date: | **12/4/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 2160 | 100 | 2000 | 95.57 | 103 | 90 | 110 | | | |
| Nitrate-N | 500 | 50.0 | 451.6 | 0 | 111 | 90 | 110 | | | S |
| Sulfate | 3610 | 300 | 2000 | 1485 | 106 | 90 | 110 | | | |

| Sample ID | **1512042-02AMSD** | Batch ID: | **72553** | TestNo: | **E300** | Units: | **mg/L** |
|---|---|---|---|---|---|---|---|
| SampType: | **MSD** | Run ID: | **IC2_151204A** | Analysis Date: | **12/4/2015 11:24:51 AM** | Prep Date: | **12/4/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 2160 | 100 | 2000 | 95.57 | 103 | 90 | 110 | 0.001 | 20 | |
| Nitrate-N | 494 | 50.0 | 451.6 | 0 | 109 | 90 | 110 | 1.27 | 20 | |
| Sulfate | 3620 | 300 | 2000 | 1485 | 107 | 90 | 110 | 0.352 | 20 | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: IC2_151204A**

| Sample ID **ICV-151204** | Batch ID: **R82939** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **IC2_151204A** | Analysis Date: **12/4/2015 9:01:02 AM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 24.1 | 1.00 | 25.00 | 0 | 96.4 | 90 | 110 | | | |
| Nitrate-N | 13.6 | 0.500 | 12.50 | 0 | 109 | 90 | 110 | | | |
| Sulfate | 75.4 | 3.00 | 75.00 | 0 | 101 | 90 | 110 | | | |

| Sample ID **CCV1-151204** | Batch ID: **R82939** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **IC2_151204A** | Analysis Date: **12/4/2015 12:03:35 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.80 | 1.00 | 10.00 | 0 | 98.0 | 90 | 110 | | | |
| Nitrate-N | 5.40 | 0.500 | 5.000 | 0 | 108 | 90 | 110 | | | |
| Sulfate | 29.7 | 3.00 | 30.00 | 0 | 98.9 | 90 | 110 | | | |

| Sample ID **CCV2-151204** | Batch ID: **R82939** | TestNo: **E300** | Units: **mg/L** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **IC2_151204A** | Analysis Date: **12/4/2015 3:37:46 PM** | Prep Date: |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 9.74 | 1.00 | 10.00 | 0 | 97.4 | 90 | 110 | | | |
| Nitrate-N | 5.38 | 0.500 | 5.000 | 0 | 108 | 90 | 110 | | | |
| Sulfate | 29.8 | 3.00 | 30.00 | 0 | 99.3 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: TITRATOR_151209B**

The QC data in batch 72624 applies to the following samples: 1512060-01C, 1512060-02C, 1512060-03C, 1512060-04C

| Sample ID **LCS-72624** | Batch ID: **72624** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.51** |
|---|---|---|---|
| SampType: **LCS** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 11:00:00 AM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Total (As CaCO3) | 52.9 | 20.0 | 50.00 | 0 | 106 | 74 | 129 | | | |

| Sample ID **MB-72624** | Batch ID: **72624** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.5** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 11:02:00 AM** | Prep Date: **12/9/2015** |

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

| Sample ID **1512059-01C DUP** | Batch ID: **72624** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.52** |
|---|---|---|---|
| SampType: **DUP** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 11:18:00 AM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 289 | 20.0 | 0 | 291.2 | | | | 0.643 | 20 | |
| Alkalinity, Carbonate (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Total (As CaCO3) | 289 | 20.0 | 0 | 291.2 | | | | 0.643 | 20 | |

| Sample ID **1512104-10B DUP** | Batch ID: **72624** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.53** |
|---|---|---|---|
| SampType: **DUP** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 2:46:00 PM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 263 | 20.0 | 0 | 263.2 | | | | 0.228 | 20 | |
| Alkalinity, Carbonate (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | 0 | | | | 0 | 20 | |
| Alkalinity, Total (As CaCO3) | 263 | 20.0 | 0 | 263.2 | | | | 0.228 | 20 | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: TITRATOR_151209B**

| Sample ID **ICV-151209** | Batch ID: **R83024** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.52** |
|---|---|---|---|
| SampType: **ICV** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 10:54:00 AM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 12.6 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 85.4 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 98.1 | 20.0 | 100.0 | 0 | 98.1 | 98 | 102 | | | |

| Sample ID **CCV1-151209** | Batch ID: **R83024** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.51** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 12:33:00 PM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 21.3 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 79.0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 100 | 20.0 | 100.0 | 0 | 100 | 90 | 110 | | | |

| Sample ID **CCV2-151209** | Batch ID: **R83024** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.51** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 2:26:00 PM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 30.8 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 68.6 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 99.4 | 20.0 | 100.0 | 0 | 99.4 | 90 | 110 | | | |

| Sample ID **CCV3-151209** | Batch ID: **R83024** | TestNo: **M2320 B** | Units: **mg/L @ pH 4.5** |
|---|---|---|---|
| SampType: **CCV** | Run ID: **TITRATOR_151209B** | Analysis Date: **12/9/2015 2:55:00 PM** | Prep Date: **12/9/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Alkalinity, Bicarbonate (As CaCO3) | 10.7 | 20.0 | 0 | | | | | | | |
| Alkalinity, Carbonate (As CaCO3) | 90.1 | 20.0 | 0 | | | | | | | |
| Alkalinity, Hydroxide (As CaCO3) | 0 | 20.0 | 0 | | | | | | | |
| Alkalinity, Total (As CaCO3) | 101 | 20.0 | 100.0 | 0 | 101 | 90 | 110 | | | |

**Qualifiers:**

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

**CLIENT:** Larson & Associates
**Work Order:** 1512060
**Project:** Legacy LMPSU Trash Pit

# ANALYTICAL QC SUMMARY REPORT

**RunID: WC_151208C**

The QC data in batch 72614 applies to the following samples: 1512060-01C, 1512060-02C, 1512060-03C, 1512060-04C

| Sample ID **MB-72614** | Batch ID: **72614** | TestNo: **M2540C** | Units: **mg/L** |
|---|---|---|---|
| SampType: **MBLK** | Run ID: **WC_151208C** | Analysis Date: **12/9/2015 8:00:00 AM** | Prep Date: **12/8/2015** |

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

| Sample ID **LCS-72614** | Batch ID: **72614** | TestNo: **M2540C** | Units: **mg/L** |
|---|---|---|---|
| SampType: **LCS** | Run ID: **WC_151208C** | Analysis Date: **12/9/2015 8:00:00 AM** | Prep Date: **12/8/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 745 | 10.0 | 745.6 | 0 | 99.9 | 90 | 113 | | | |

| Sample ID **1512050-01C-DUP** | Batch ID: **72614** | TestNo: **M2540C** | Units: **mg/L** |
|---|---|---|---|
| SampType: **DUP** | Run ID: **WC_151208C** | Analysis Date: **12/9/2015 8:00:00 AM** | Prep Date: **12/8/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 257 | 10.0 | 0 | 256.0 | | | | 0.390 | 5 | |

| Sample ID **1512087-04G-DUP** | Batch ID: **72614** | TestNo: **M2540C** | Units: **mg/L** |
|---|---|---|---|
| SampType: **DUP** | Run ID: **WC_151208C** | Analysis Date: **12/9/2015 8:00:00 AM** | Prep Date: **12/8/2015** |

| Analyte | Result | RL | SPK value | Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Total Dissolved Solids (Residue, Filtera | 3970 | 50.0 | 0 | 4000 | | | | 0.753 | 5 | |

**Qualifiers:**

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