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October 21, 2014

Mr. Bill Renfro, P.G.
Senior Technical Coordinator
Railroad Commission of Texas
1701 North Congress
Austin, Texas 78711-2967

STATE OF TEXAS
SHANNON A. HOOVER
GEOLOGY
1070
LICENSED
PROFESSIONAL GEOSCIENTIST

21 Oct 2014
TBPG Firm # 50472

Re: Ballinger Seep 2014 BMP Monitoring Event Results, Upper Colorado River Segment 1426, Downstream of E.V. Spence Reservoir, Runnels County, Texas

Dear Mr. Renfro:

The purpose of this report is to present the results of the Best Management Practice (BMP) monitoring activities conducted during July 2014 at the Ballinger Seep Site (Site) located in Runnels County, Texas. The Railroad Commission of Texas (RRC) requested that TRC Environmental Corporation (TRC) perform sampling of groundwater and surface water around the Ballinger Seep Site to monitor current site conditions and support BMP development to reduce salinity loading to the Colorado River.

INTRODUCTION

In 2000, the Texas Commission on Environmental Quality (TCEQ) placed Segment 1426 on the State of Texas' 303(d) list as the surface water does not meet the water quality standards for total dissolved solids (TDS) and chloride (salinity parameters). The Site is located immediately downstream of the City of Ballinger, along Segment 1426 of the Upper Colorado River between the E.V. Spence and O.H. Ivie Reservoirs in the Valley Creek area (see Figure 1). Two groundwater seeps were identified along a drainage feature (unnamed tributary) that discharges into the Colorado River. Samples of water from the seep contained chloride concentrations up to 58,000 milligrams per liter (mg/L). The source of the seep is suspected to be a former oil and gas well (identified as Wolverton Well No. 1), located approximately 350 feet east of the unnamed tributary.

The RRC completed phase 1 of this project in 2008, with funding from the United States Environmental Protection Agency's (US EPA) Section 319 nonpoint source (NPS) program of the Clean Water Act, administered by the TCEQ, and RRC's Oil and Gas Regulation and

Cleanup Fund. Phase 1 investigation activities were completed between July 2005 and August 2008 to evaluate the potential source (or sources) of high salinity groundwater and hydraulic connection to the seep, evaluate the hydraulic connection of the seep to the unnamed tributary, evaluate salinity loading to the unnamed tributary and the Colorado River, and identify methods to abate salinity contributions of the seep. Through these investigations the main lithologic units identified at the Site consist of alluvium and the Leuders Formation (Terracon, 2008). The investigation activities also revealed three groundwater zones with elevated salinity: a shallow zone along the unnamed tributary; a deeper zone that discharges into the alluvium present along the Colorado River but does not appear to intercept the unnamed tributary; and the alluvial zone adjacent to the river.

The Wolverton Well No. 1 had originally been plugged with difficulty by the RRC in 1998, but groundwater analytical data suggested that the Wolverton Well No. 1 continued to be a source of salinity to the two groundwater-bearing units (GWBUs), the seeps, and the unnamed tributary. One BMP designed to mitigate salinity loading to groundwater, the seeps, and surface water involved the re-entry and re-plugging of the Wolverton Well No. 1. In June 2008, the Wolverton Well No. 1 was successfully re-plugged according to RRC regulations. During plugging activities, saltwater flow was observed within the borehole, confirming that the well remained a salinity source prior to the 2008 re-plugging activities.

Additional monitoring of groundwater and surface water conditions was completed at the Site in December 2009 and December 2011. Analytical results from the December 2009 and December 2011 monitoring events indicated that chloride concentrations of samples collected from monitoring wells across the Site were elevated and generally higher than chloride concentrations detected during previous sampling events.

In 2013, the US EPA awarded an additional NPS grant through the TCEQ to the RRC for the development/refinement of remediation/abatement alternatives or BMPs and the implementation of the BMPs at the Site. The goal of the current project is to design, install, and operate BMPs in order to mitigate the salinity load into the Colorado River from impacted groundwater beneath the Site which discharges into the river from seepage along the Colorado River and the unnamed tributary. Tasks associated with this grant project include preparation of separate monitoring and modeling Quality Assurance Project Plans (QAPPs), investigation of optimum implementation locations for BMPs, implementation of a saline water extraction system, and BMP effectiveness monitoring.

The objective of the July 2014 monitoring event was to collect current data on the distribution of salinity in groundwater and surface water, supplement the previous investigation results, and evaluate the effectiveness of plugging the Wolverton Well No. 1 on water quality at the Site. This letter report presents the data collected from the July 2014 monitoring event.

GROUNDWATER AND SURFACE WATER MONITORING

TRC conducted groundwater monitoring activities at the Site from July 29 through July 31, 2014. TRC personnel coordinated field activities with the RRC San Angelo District 7C Office to obtain access to sample locations, which are located on private property. Field activities during this monitoring event were performed in accordance with the Work Plan dated July 2014 and the QAPP dated July 2014. Field activities included synoptic well gauging, surface water sampling, groundwater sampling, Quality Assurance/Quality Control (QA/QC) sampling, and management of investigation-derived waste (IDW). Surface water sampling and groundwater monitoring well locations are illustrated on Figure 2. The monitoring activities were completed in accordance with the Work Plan and QAPP with the following variances:

- Surface water samples from the seep (LOWER SEEP) and unnamed tributary locations (SW-TRIB-1 through SW-TRIB-6) were not collected because the seep and tributary were dry.

- Groundwater samples were not collected from monitoring wells MW-6, MW-10, and MW-11. The gauging measurements at monitoring well MW-6 indicated there was 0.14 feet of water present, which was an inadequate volume of groundwater to sample and likely represented residual groundwater trapped in the sump of the well that was not in connection with the saturation zone. Monitoring wells MW-10 and MW-11 were completely dry; therefore, no sample could be collected. MW-12 was purged dry and sampled for cations; however, insufficient water recharged during the remainder of the field event to collect the volume needed for anions, alkalinity, and TDS analyses.

A synoptic groundwater gauging event was conducted on July 29, 2014, prior to groundwater sampling activities. The wells were subsequently purged and sampled using a disposable polyethylene bailer to remove at least three well casing volumes of groundwater or until three consecutive readings of field parameters indicated stability. Field parameters measured during purging included temperature, conductivity, pH, TDS, and oxidation-reduction potential (ORP). The field parameter information was recorded on Groundwater Sampling Forms, which are provided in Attachment 1. A copy of the field logbook is also provided in Attachment 1. Monitoring wells MW-8, MW-14, MW-16, and MW-17 had considerable amounts of mesquite tree roots that required removal by TRC personnel prior to the synoptic gauging and sampling event.

Surface water samples were collected directly into laboratory containers at the sampling locations. Field parameters were measured *in situ* at the surface water sampling locations using a properly calibrated YSI Model 6920 water quality meter. Field parameters consisted of pH, temperature, conductivity, TDS, and ORP. The Surface Water Sampling Forms are also provided in Attachment 1, along with the YSI calibration log.

Surface water and groundwater samples were submitted to DHL Analytical (DHL) in Round Rock, Texas, for the following laboratory analyses:

- Anions (Bromide, Chloride, Nitrate, and Sulfate) by EPA Method 300.0
- Alkalinity (Carbonate, Bicarbonate, and Total) by EPA Method SM 2320B
- Cations (Calcium, Magnesium, Potassium, and Sodium) by EPA Method 6020A
- Total filterable residue (i.e., TDS) by EPA Method SM 2540C.

Copies of the DHL analytical reports and chain-of-custody forms are provided in Attachment 2. Groundwater and surface water sample locations are depicted in Figure 2. Discussion of analytical data in this report is based on chloride as the key analyte for the Site.

MONITORING RESULTS

Previous investigations at the Site have identified the presence of three groundwater zones, as indicated by lithology and groundwater data obtained during the previous investigations: (1) a shallow zone associated with the unnamed tributary and intercepted by monitoring wells MW-1, MW-3, MW-4, MW-6, and MW-12; (2) a deeper zone intercepted by monitoring wells MW-2, MW-5, MW-10, MW-11, MW-13, and MW-15; and (3) an alluvial zone located adjacent to the Colorado River and intercepted by monitoring wells MW-7, MW-8, MW-9, MW-14, MW-16, and MW-17. The estimated extent of the alluvium present along the bank of the Colorado River is depicted in Figure 3.

Based on data collected from previous investigations, the deeper zone and the alluvial zone are considered hydraulically connected, with groundwater in the deeper zone discharging into the alluvium unit. It is also suspected, based on investigation data, that water from the shallow zone discharges via the Ballinger Seep onto ground surface and flows down the unnamed tributary to the alluvium unit located adjacent to the Colorado River during periods of low precipitation. This surface water then infiltrates downward into the Colorado River alluvium contacts in the tributary bed (Terracon, 2008).

Field observations during the July 2014 event observed no flow discharging from the Lower Seep and no surface water present at SW-TRIB-1 through SW-TRIB-6 locations within the unnamed tributary.

Groundwater Level Measurements

Seventeen monitoring wells were synoptically gauged on July 29, 2014. Table 1 presents the monitoring well gauging data including ground surface elevations, top of well casing elevations, depth-to-water level measurements from top of casing, and calculated water elevations. The groundwater potentiometric map for July 2014 is presented as Figure 3.

The July 2014 groundwater elevation data suggest that the flow pattern in each groundwater zone is generally to the north and northeast toward the Colorado River and consistent with flow patterns identified in previous investigations. A brief discussion of the July 2014 groundwater flow within each zone is provided below:

- Groundwater in the shallow zone appears to be localized to the area around the unnamed tributary. Gauging data indicates a slight rebound of groundwater levels in the shallow zone from the 2011 monitoring event, as groundwater elevations have generally increased, although wells MW-6 and MW-12 still appear to be essentially dry. The apparent flow direction in this zone is to the north towards the Colorado River with a groundwater gradient of approximately 0.052 feet per foot (ft/ft).

- Within the deeper zone, groundwater also flows north and northeast towards the Colorado River with a groundwater gradient of 0.036 ft/ft. Groundwater from the deeper zone appears to discharge into the alluvial unit in the vicinity of monitoring wells MW-7, MW-8, MW-9, MW-14, and MW-17. Gauging data also indicated a slight rebound in groundwater levels in the deeper zone as compared to 2011 data.

- Groundwater in the alluvial zone is presumed to flow to the north/northeast toward the Colorado River. The groundwater gradient in the alluvial zone is estimated to be 0.067 ft/ft. A slight rebound in groundwater elevations was also measured in the alluvial zone wells as compared to 2011 data.

Surface Water Level and Stream Flow Measurements

There are currently no stream gauging stations present for surface water level measurements; however, stream flow measurements were collected at three transects along the Colorado River, as follows:

- At a location 1,000 feet upstream of where the unnamed tributary discharges to the river (i.e., SW-CR-1000' Up sample location);

- At the confluence of the unnamed tributary and the river; and,

- At a location 500 feet downstream of where the unnamed tributary discharges to the river (i.e., SW-CR-500 Down sample location).

Stream flow measurements were collected in accordance with methods described in the July 2014 QAPP and the project-specific Work Plan dated July 2014. Stream flow measurement forms are included in Attachment 1. Based on the stream flow measurements, there was virtually no flow in the river at the time the measurements were collected on July 31, 2014. Flow measurements were calculated to be 0.4 cubic feet per second (ft^3/s) at the location 100 feet upstream, -0.7 ft^3/s at the confluence of the unnamed tributary, and -12 ft^3/s at the location 500

feet downstream. Visual observations also suggested that water in the river at these locations was ponded and not flowing. There were stretches of river along the project area where the river depth was less than half a foot with no observable flow.

Surface Water and Seep Sampling Results

During the July 2014 monitoring event, surface water samples were collected from the following locations:

- Three stations (SW-CR-50' Up, SW-CR-250' Up, and SW-CR-1,000' Up) along the Colorado River located 50 feet, 250 feet, and 1,000 feet, upstream of the mouth of the unnamed tributary, respectively.

- Five stations (SW-CR-50' Down, SW-CR-500' Down, SW-CR-900' Down, SW-CR-1,500' Down, and SW-CR-2,500' Down) located 50 feet, 500 feet, 900 feet, 1,500 feet, and 2,500 feet downstream of the mouth of the unnamed tributary, respectively.

Water samples were not collected from the tributary locations or Lower Seep, because these locations were dry. The chloride data from surface water samples are depicted in Figure 4. The surface water analytical results are summarized in Table 2. A brief discussion of the trends observed in the surface water in the Colorado River is provided below.

Colorado River Surface Water Samples

July 2014 surface water chloride concentrations along the Colorado River ranged from 48.4 milligrams per liter (mg/L) to 90.2 mg/L. Upstream of the confluence with the unnamed tributary, surface water concentrations along the Colorado River ranged from 55.8 mg/L to 58.2 mg/L; downstream concentrations ranged from 48.4 mg/L to 90.2 mg/L. TDS concentrations ranged from 323 mg/kg to 469 mg/kg.

Prior to the July 2014 sampling event, surface water data from the Colorado River sample locations were last collected in December 2011. A comparison of the December 2011 and July 2014 chloride concentration data indicates that analyte concentrations have decreased by an approximate order of magnitude between the two events, notably chloride, sulfate, calcium, sodium, and TDS. Surface water sample results suggest improved water quality conditions for the Colorado River during the July 2014 monitoring event, which may be the result of an influx of fresh water into the system from increased precipitation in the region in 2014. Additionally, previous investigations have suggested that the river may fluctuate between being a gaining or a losing stream. Although surface water elevations at the river were not measured during the July 2014 event, based on groundwater elevations in the deeper and alluvial groundwater zones, the river may currently be a losing stream where high salinity groundwater is not discharging to surface water.

Tributary Surface Water and Seep Results

No samples were collected from the Tributary Surface Water Locations or the Lower Seep since these locations were dry. The locations will be re-evaluated during the next sampling event.

Groundwater Results

During the July 2014 monitoring event, groundwater samples were collected from 14 monitoring wells (MW-1 through MW-5, MW-7 through MW-9, and MW-12 through MW-17). As previously stated, samples were not collected from monitoring wells MW-6, MW-10, and MW-11 because the wells were considered dry. The groundwater analytical results are summarized in Table 3. The chloride distribution in groundwater is depicted in Figure 5. For locations with duplicate sample data, the higher of the two concentrations is reported.

Chloride concentrations in the July 2014 samples ranged from 1,160 mg/L to 20,200 mg/L in the deep zone at MW-13 and MW-5, respectively, and from 3,240 mg/L to 19,500 mg/L in the shallow zone at MW-1 and MW-3, respectively. Chloride concentrations in alluvial zone wells ranged from 1,510 mg/L at MW-17 to 11,000 mg/L at MW-7. The July 2014 groundwater chloride concentrations were generally lower as compared to the December 2011 results. Evaluation of available data for chloride concentrations and groundwater elevations indicates a possible trend of increasing chloride concentrations with decreasing groundwater elevations, such that the slight increase in groundwater elevations may correlate to the slight decrease in chloride concentrations observed during the July 2014 event.

Background chloride concentrations for the Lueders Formation (the deeper groundwater zone) range from 87 mg/L to 1,450 mg/L, with an average of 315 mg/L (Terracon, 2008). Chloride concentrations corresponding to background concentrations were detected in monitoring wells MW-13 at 1,160 mg/L (upgradient of chloride plume) and MW-17 at 1,510 mg/L (cross-gradient of chloride plume) during the July 2014 event and may indicate the extent of the plume in those directions.

A brief discussion of chloride trends observed in the shallow groundwater zones followed by a discussion of chloride trends in the deep and alluvial zones is provided below. Chloride trends in the deep and the alluvial zones are discussed together based on their hydraulic connection. Chloride concentration trends over time in selected monitoring wells in each groundwater zone are presented in Graphs 1 through 3 (shallow, deeper, and alluvial zones, respectively). Identified chloride trends since the Wolverton Well No. 1 was plugged in June 2008 are also discussed.

Shallow Groundwater Zone

Chloride concentrations within the shallow groundwater zone decreased between the December 2011 and July 2014 events, as shown on Graph 1. The groundwater elevation trend over time for MW-3 as a representative well for the shallow zone is also depicted on Graph 1 to illustrate the possible relationship between groundwater elevations and chloride concentrations.

Since the Wolverton Well No. 1 was re-plugged in June 2008, the largest increases in chloride concentrations in the shallow groundwater zone were observed in monitoring well MW-3. However, more recent samples at MW-3 have exhibited a decreasing trend. It is not clear at this time if the decreasing trend is a function of the Wolverton Well No. 1 being plugged or fluctuations in groundwater elevations. Chloride concentrations in monitoring wells MW-1 and MW-4 had consistently increased between July 2006 and December 2011, but exhibited decreases in concentrations for the July 2014 event. The lateral extent of elevated chloride concentrations in the shallow groundwater zone has not been delineated in any direction.

Deeper and Alluvial Groundwater Zones

Chloride concentrations in the deeper and alluvial groundwater zones over time are shown on Graphs 2 and 3. In general, deeper and alluvial zone wells exhibited increasing chloride concentrations after the Wolverton Well No. 1 was re-plugged in June 2008, but groundwater samples at each of these wells in the July 2014 event exhibited decreases from the December 2011 event. However, it is not clear at this time if the decreasing trend is a function of the Wolverton Well No. 1 being plugged or fluctuations in groundwater elevations. The lateral extent of elevated chloride concentrations in the deeper and alluvial groundwater zones appears to be locally delineated by wells MW-13, an upgradient location, and well MW-17, a cross-gradient location, but otherwise the chloride plume is not delineated.

Quality Assurance Project Plan

The analytical results were reviewed for compliance with the QA/QC criteria established in the July 2014 Monitoring QAPP. The QA/QC analytical data review is presented in Attachment 3. QA/QC data associated with laboratory measurements indicate that measurement data are defensible and that measurement data reliability is generally within expected limits of sampling and analytical error given the data interpretation issues identified in the evaluation.

INVESTIGATION-DERIVED WASTE MANAGEMENT

The July 2014 sampling event generated approximately 110 gallons of investigation-derived waste (IDW) purge and decontamination water and one 55-gallon drum of spent PPE and trash. The IDW water and trash is temporarily stored in 55-gallon drums that are staged near the Site

entrance gate. Transportation and disposal of the IDW at a facility permitted to accept RRC exempt waste is currently being coordinated with the RRC San Angelo District 7C Office.

CONCLUSIONS

The following conclusions are made based on the data collected in July 2014, as well as historical data provided by the RRC:

- Groundwater flow in the shallow groundwater zone appears to be localized, with flow to the north along the unnamed tributary. Groundwater flow in the deeper and alluvial groundwater zones also largely flows to the north towards the river. Groundwater flow directions observed in all three groundwater zones are consistent with historical data.

- A comparison of the December 2011 and July 2014 chloride concentration data for surface water from sample locations along the Colorado River indicates that chloride concentrations have decreased significantly between these two events. Possible reasons for the decreases in concentration include an influx of fresher water into the system from increased precipitation in 2014 and the river likely being a losing stream at this time (i.e., high salinity groundwater is not discharging into the river).

- Chloride concentrations in all three groundwater zones are elevated. During the July 2014 monitoring event, decreases in chloride concentrations from the December 2011 event were noted. Evaluation of available data for chloride concentrations and groundwater elevations indicates a possible trend of increasing chloride concentrations with decreasing groundwater elevations, such that the slight increase in groundwater elevations may correlate to the slight decrease in chloride concentrations observed during the July 2014 event.

- The lateral extents of salinity impacts in the three groundwater zones have not been delineated.

RECOMMENDATIONS

Based on the data collected in July 2014 and previous investigations, the following actions are recommended:

- Continue surface water and groundwater sampling to monitor salinity distribution, evaluate temporal trends, and evaluate if the plugging of the Wolverton Well No. 1 has contributed to a reduction in chloride concentrations.

- Reinstallation or routine maintenance of the current monitoring wells is recommended if long-term monitoring is expected at the Site due to the poor condition of the flush mounts, mesquite root masses that continue to deteriorate the PVC piping, and multiple wells that are either dry or have very short water columns. Installation of nested or deeper wells should be considered for vertical delineation of high salinity groundwater in the deeper and alluvial

zones, notably for data relevant to groundwater modeling efforts and design of future BMPs (e.g., groundwater extraction).

- Installation of stream gages and piezometers to monitor the interaction of groundwater and surface water, evaluate when the river is a gaining versus a losing stream, and to collect additional data associated with the surface water system for upcoming groundwater modeling efforts.

- Installation of additional monitoring wells in all three groundwater zones to complete delineation of the high salinity groundwater plumes. Proposed well locations are shown on Figure 6. Additional monitoring wells are recommended as follows:

  - East and west of wells MW-1 and MW-4 in the shallow zone;
  - West of well MW-3 in the shallow zone;
  - Re-installation of wells MW-6 and MW-12 in the shallow zone to penetrate the saturated zone;
  - Southwest of well MW-11 in the deeper zone (or re-installation of well MW-11 to penetrate the saturated zone);
  - South of well MW-5 in the deeper zone (nested with shallow well MW-12);
  - Re-installation of well MW-10 in the deeper zone;
  - Southeast of well MW-15 in the deeper zone;
  - In between wells MW-9 and MW-16 to determine if MW-16 is from a different source; and,
  - West of well MW-16 in alluvial zone.

- Investigate other potentially leaking oil and gas wells in the area.

- Investigate fractures in the Lueders Formation that may provide secondary pathways for upward migration of saline water from the Coleman Junction Formation.

TRC appreciates the opportunity to assist the RRC with this project. If you have any further questions or comments, please do not hesitate to contact me at (512) 684-3127.

Sincerely,

Shannon Hoover, P.G.
Senior Project Manager

cc: Brian Floyd, Railroad Commission of Texas, San Angelo, Texas
Arsin Sahba, TRC, Austin, Texas

FIGURES

TABLES

GRAPHS

ATTACHMENTS

REFERENCES

RRC, 2008. *Investigations and Abatement of Produced Water Impacts and Seeps to Surface Water in the Upper Colorado River Basin Downstream of Spence Reservior (Segment 1426) Quality Assurance Project Plan*. The Railroad Commission of Texas, March 19, 2008.

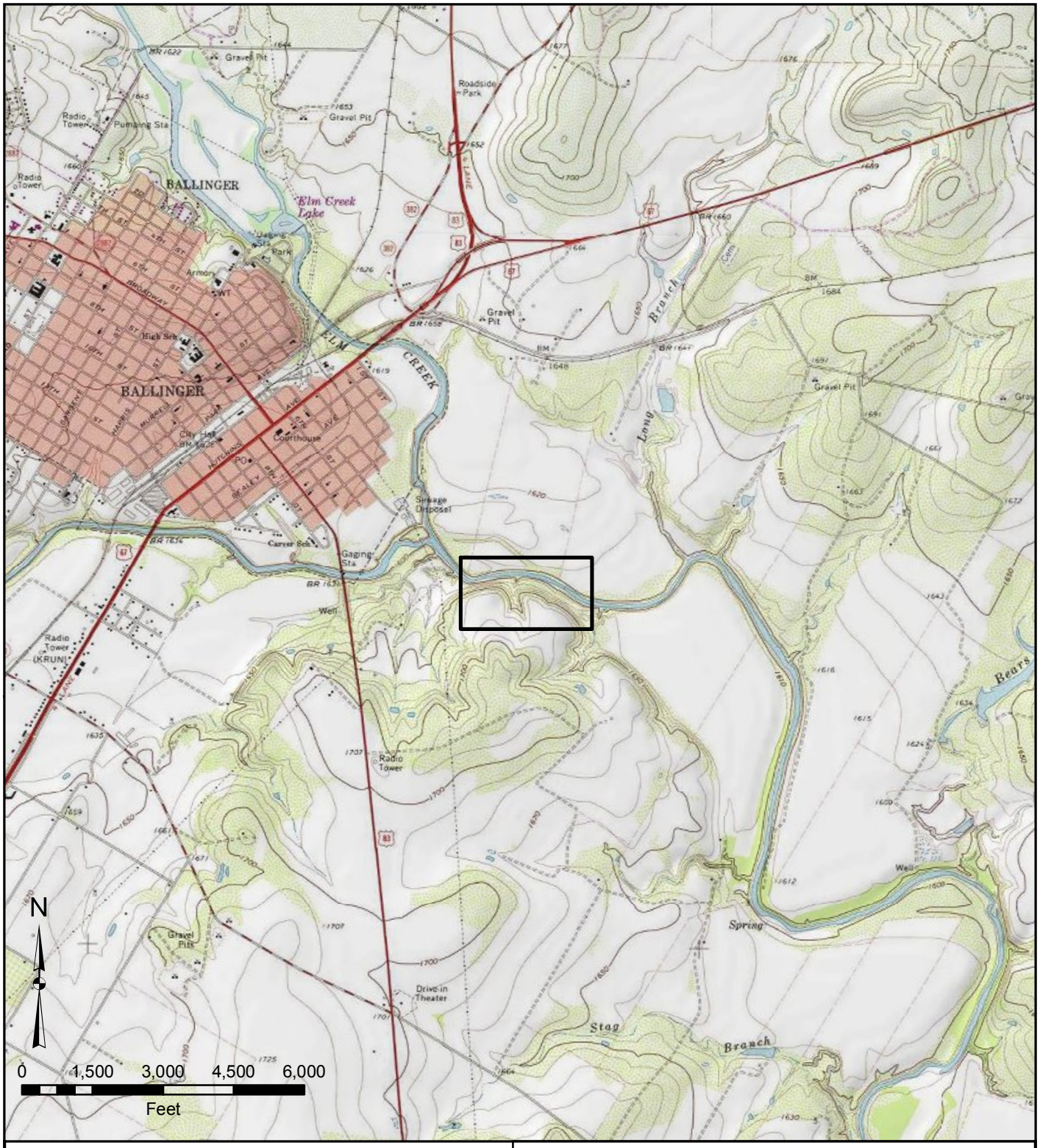
RRC, 2014. *Investigation and Mitigation of Produced Water Contamination Into the Upper Colorado River Basin Downstream of E.V. Spence Reservoir (Segment 1426), Ballinger Seep/Wendkirk Oil Field, Contracts 582-14-40159, 40160, Quality Assurance Project Plan (QAPP).* The Railroad Commission of Texas, July 2014.

Terracon, 2007. *Limited Site Investigation, Ballinger Seep, Ballinger, Runnels County, Texas. Terracon Project 94057272B.* Terracon Consultants, Inc., August 28, 2007.

Terracon, 2008. *Summary Report, Ballinger Seep, Ballinger, Runnels County, Texas, Terracon Project No. 94057272C*. Terracon Consultants, Inc., September 12, 2008.

TRC, 2014. *Work Plan, Ballinger Seep Site, 2014 BMP Monitoring Event, Runnels County, Texas.* TRC Environmental Corporation (TRC), July 2014.

FIGURES



LEGEND:

SITE AREA

SOURCE:

U.S.G.S. 7.5-MINUTE SERIES TOPOGRAPHIC MAP, HATCHEL, BALLINGER TEXAS (2010)

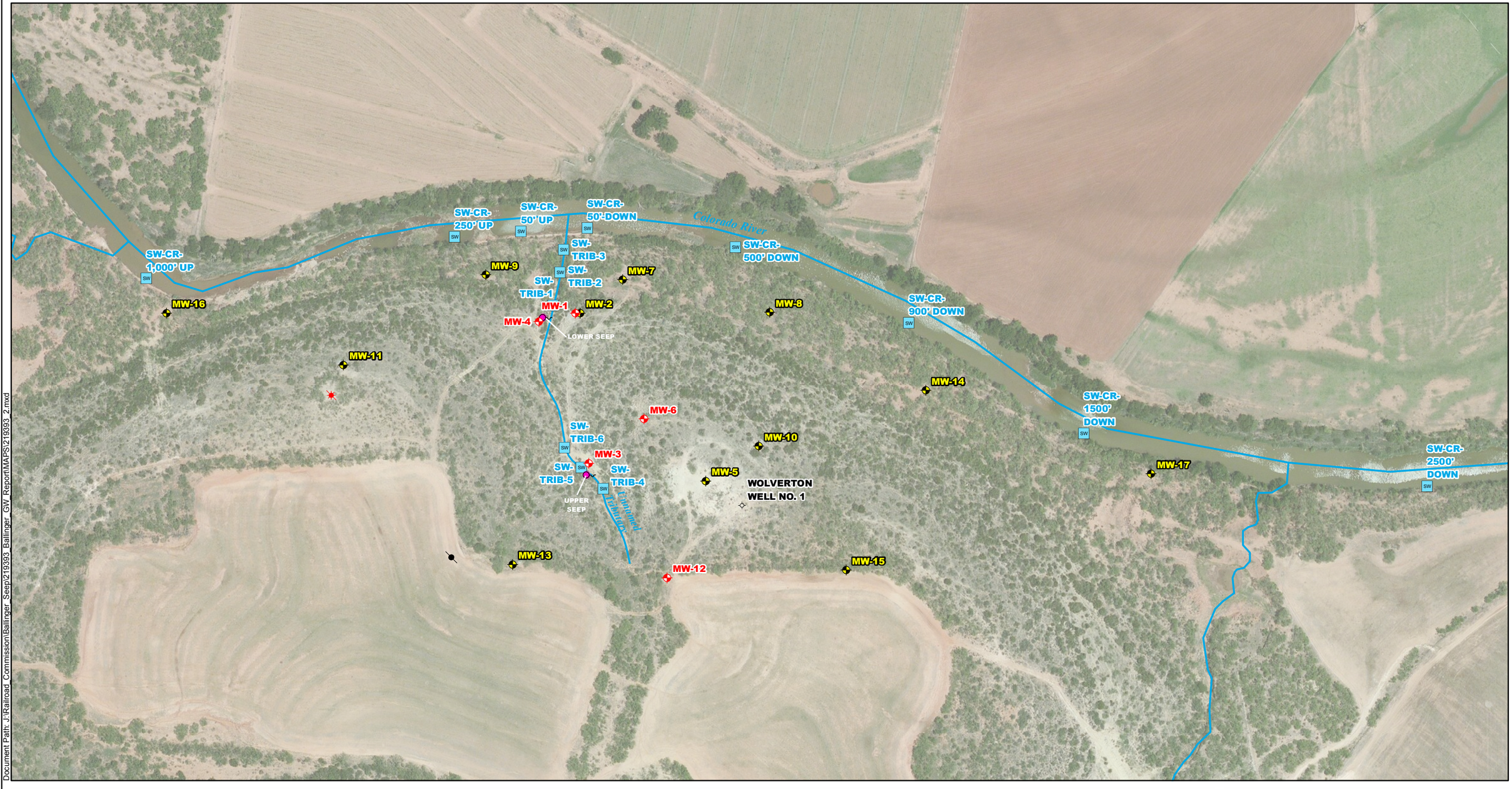
SITE LOCATION MAP

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 08/11/2014	MXD: 219393_1

TRC
505 EAST HUNTLAND DRIVE
SUITE 250
AUSTIN, TEXAS 78752
(512) 329-6080

FIGURE 1



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Legend

- MONITORING WELL, DEEP
- MONITORING WELL, SHALLOW
- DRY HOLE
- PLUGGED OIL WELL
- PLUGGED OIL/GAS WELL
- SEEP
- SURFACE WATER SAMPLE (LOCATIONS ARE APPROXIMATE)
- RIVERS/STREAMS

SOURCES:
1. AERIAL IMAGERY - MICROSOFT AND THEIR DATA PARTNERS.
2. SUMMARY REPORT, BALLINGER SEEP, BALLINGER, RUNNELS COUNTY, TEXAS, TERRACON CONSULTANTS, INC., SEPT. 2008

N

0 125 250

Feet

SITE MAP

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
BALLINGER, RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 9/24/2014	MXD: 219393_2

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FIGURE 2

APPROXIMATE EXTENT OF ALLUVIAL DEPOSITS ALONG THE COLORADO RIVER

Colorado River

SW-CR-1,000' UP
SW-CR-250' UP
SW-CR-50' UP
SW-CR-50' DOWN
SW-CR-500' DOWN
SW-CR-900' DOWN
SW-CR-1500' DOWN
SW-CR-2500' DOWN
SW-TRIB-1
SW-TRIB-2
SW-TRIB-3
SW-TRIB-4
SW-TRIB-5
SW-TRIB-6
LOWER SEEP
UPPER SEEP
Unnamed Tributary

MW-16 1,586.43
MW-9 1,585.54
MW-7 1,586.19
MW-2 1,601.96
MW-4 1,609.55
MW-1 1,611.54
MW-8 1,585.16
MW-11 DRY
MW-14 1,585.57
MW-6 1,618.78
MW-10 DRY
MW-3 1,632.33
MW-5 1,613.21
MW-17 1,585.57
WOLVERTON WELL NO. 1
MW-15 1,613.21
MW-13 1,615.24
MW-12 1,624.65

1,590
1,595
1,600
1,605
1,610
1,615
1610
1615
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1625
1630

STATE OF TEXAS
SHANNON A. HOOVER
GEOLOGY
1070
LICENSED
PROFESSIONAL GEOSCIENTIST
21 Oct 2014

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Legend

- DEEP
- SHALLOW
- DRY HOLE
- PLUGGED OIL WELL
- PLUGGED OIL/GAS WELL
- SEEP
- RIVERS/STREAMS
- POTENTIOMETRIC CONTOUR - ALLUVIUM (INFERRED)
- POTENTIOMETRIC CONTOUR - DEEP
- POTENTIOMETRIC CONTOUR - SHALLOW
- DRY — MONITORING WELL DRY - JULY 2014
- 1602.62 / 1624.65 — GROUNDWATER ELEVATION (FEET ABOVE MEAN SEA LEVEL)

SOURCES:
1. AERIAL IMAGERY - MICROSOFT AND THEIR DATA PARTNERS.
2. SUMMARY REPORT, BALLINGER SEEP, BALLINGER, RUNNELS COUNTY, TEXAS, TERRACON CONSULTANTS, INC., SEPT. 2008

N

0 125 250
Feet

GROUNDWATER POTENTIOMETRIC SURFACE MAP - JULY 2014

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
BALLINGER, RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 10/21/2014	MXD: 219393_3_print

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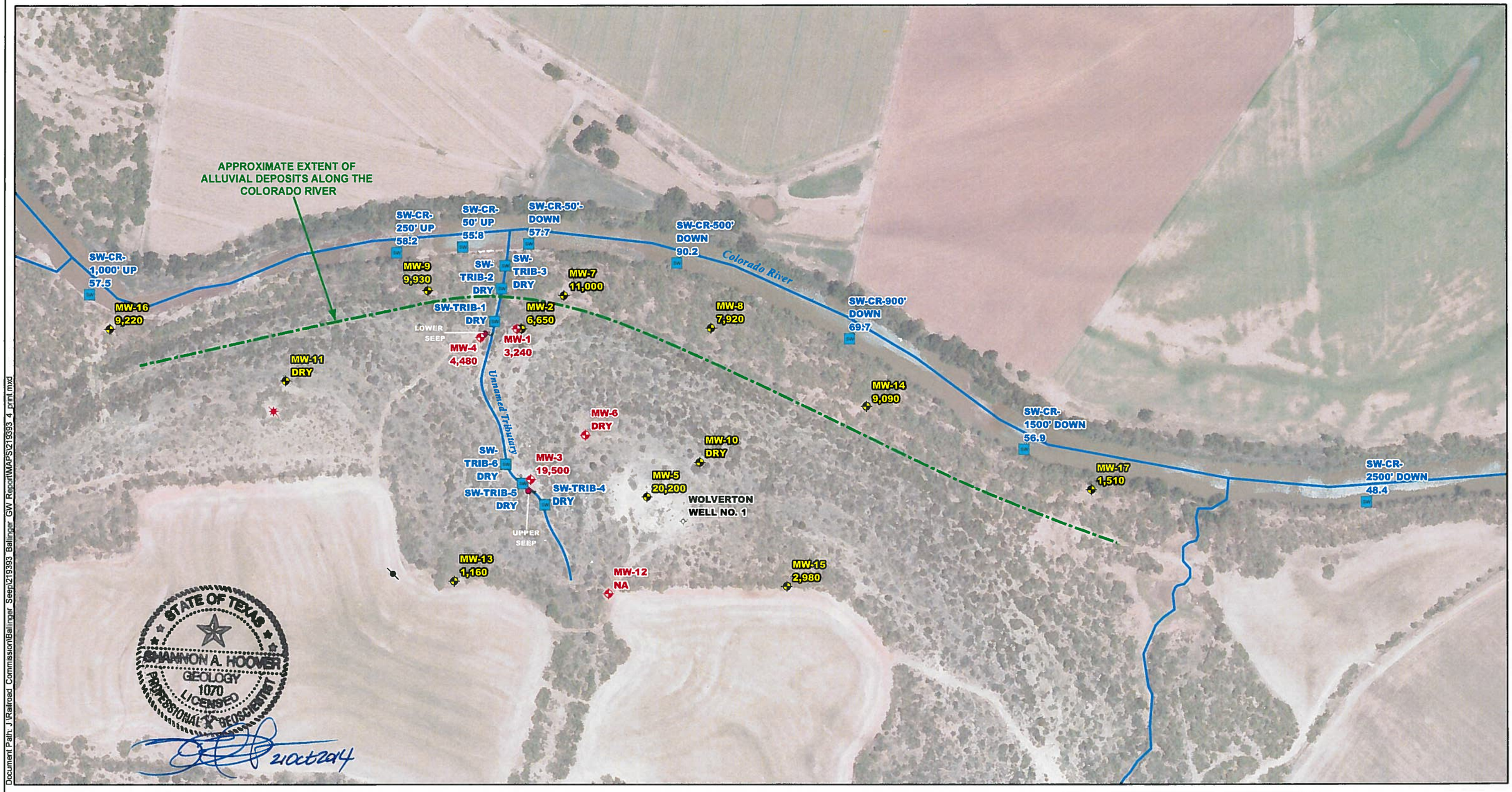
FIGURE 3



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Legend

- DEEP
- SHALLOW
- DRY HOLE
- PLUGGED OIL WELL
- PLUGGED OIL/GAS WELL
- SEEP
- SURFACE WATER SAMPLE (LOCATIONS ARE APPROXIMATE)
- RIVERS/STREAMS

NA — MONITORING WELL NOT ANALYZED FOR CHLORIDE - JULY 2014

DRY / DRY / DRY — INSUFFICIENT WATER TO SAMPLE - JULY 2014

90.2 / 4480 / 9220 — CHLORIDE CONCENTRATOIN (mg/L)

SOURCES:
1. AERIAL IMAGERY - MICROSOFT AND THEIR DATA PARTNERS.
2. SUMMARY REPORT, BALLINGER SEEP, BALLINGER, RUNNELS COUNTY, TEXAS, TERRACON CONSULTANTS, INC., SEPT. 2008

NOTE: GROUNDWATER CHLORIDE CONCENTRATIONS ARE SHOWN ON THIS FIGURE FOR REFERENCE PURPOSES.

N

0 125 250

Feet

CHLORIDE CONCENTRATIONS IN SURFACE WATER - JULY 2014

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
BALLINGER, RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 10/21/2014	MXD: 219393_4_print

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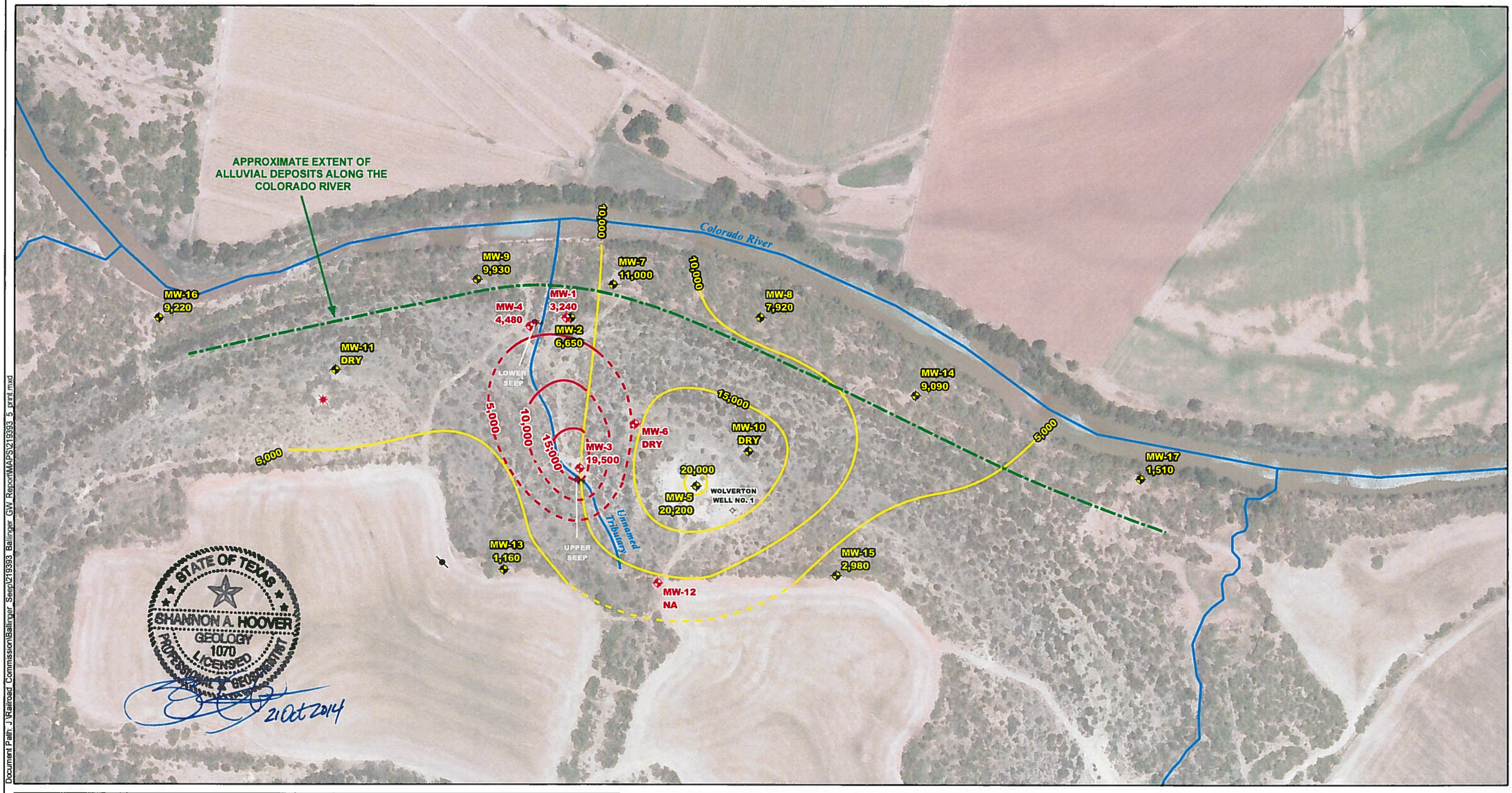
PH:512-329-6080

FIGURE 4



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Legend

- DEEP
- SHALLOW
- DRY HOLE
- PLUGGED OIL WELL
- PLUGGED OIL/GAS WELL
- SEEP
- RIVERS/STREAMS
- CHLORIDE CONCENTRATION CONTOUR LINE - DEEP (DASHED WHERE INFERRED)
- CHLORIDE CONCENTRATION CONTOUR LINE - SHALLOW (DASHED WHERE INFERRED)
- NA — MONITORING WELL NOT ANALYZED FOR CHLORIDE
- DRY / DRY — INSUFFICIENT WATER TO SAMPLE - JULY 2014
- 4480 / 9220 — CHLORIDE CONCENTRATOIN (mg/L)

SOURCES:
1. AERIAL IMAGERY - MICROSOFT AND THEIR DATA PARTNERS.
2. SUMMARY REPORT, BALLINGER SEEP, BALLINGER, RUNNELS COUNTY, TEXAS, TERRACON CONSULTANTS, INC., SEPT. 2008

N

0 125 250
Feet

CHLORIDE CONCENTRATIONS IN GROUNDWATER - JULY 2014

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
BALLINGER, RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 10/21/2014	MXD: 219393_5_print

TRC
505 E. HUNTLAND DR.
SUITE 250
AUSTIN, TX 78752
PH:512-329-6080

FIGURE 5

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Legend

- MONITORING WELL, DEEP
- MONITORING WELL, DEEP - PROPOSED
- MONITORING WELL, SHALLOW
- MONITORING WELL, SHALLOW - PROPOSED
- DRY HOLE
- PLUGGED OIL WELL
- PLUGGED OIL/GAS WELL
- SEEP
- SURFACE WATER SAMPLE (LOCATIONS ARE APPROXIMATE)
- RIVERS/STREAMS

SOURCES:
1. AERIAL IMAGERY - MICROSOFT AND THEIR DATA PARTNERS.
2. SUMMARY REPORT, BALLINGER SEEP, BALLINGER, RUNNELS COUNTY, TEXAS, TERRACON CONSULTANTS, INC., SEPT. 2008

N

0 125 250

Feet

PROPOSED MONITORING WELL LOCATIONS

RAILROAD COMMISSION OF TEXAS
BALLINGER SEEP 2014 BMP MONITORING ACTIVITIES
BALLINGER, RUNNELS COUNTY, TEXAS

AUTHOR: MLOVELACE	SAVED: 9/25/2014	MXD: 219393_6

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FIGURE 6

TABLES

Table 1
Groundwater and Surface Water Elevation Data
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Gauging Date	Ground Surface Elevation (feet asl)	Top of Casing Elevation (feet asl)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet asl)
MW-1 (Shallow Zone)	7/21/2006	1621.40	1620.88	9.54	1611.34
	8/15/2006			9.51	1611.37
	8/21/2006			9.69	1611.19
	4/23/2007			9.34	1611.54
	5/21/2007			8.09	1612.79
	5/24/2007			8.61	1612.27
	5/30/2007			7.93	1612.95
	7/7/2008			9.86	1611.02
	8/4/2008			9.83	1611.05
	12/14/2009			9.41	1611.47
	12/13/2011			10.11	1610.77
	7/29/2014			9.34	1611.54
MW-2 (Deeper Zone)	7/21/2006	1621.60	1621.58	21.40	1600.18
	8/21/2006			18.79	1602.79
	4/23/2007			18.18	1603.40
	5/21/2007			17.11	1604.47
	5/24/2007			17.42	1604.16
	5/30/2007			16.31	1605.27
	7/7/2008			17.04	1604.54
	8/4/2008			16.69	1604.89
	12/14/2009			17.43	1604.15
	12/13/2011			19.14	1602.44
	7/29/2014			19.62	1601.96
MW-3 (Shallow Zone)	7/21/2006	1636.60	1636.28	14.33	1621.95
	8/15/2006			5.39	1630.89
	8/21/2006			7.13	1629.15
	4/23/2007			3.18	1633.10
	5/21/2007			2.06	1634.22
	5/24/2007			2.11	1634.17
	5/30/2007			2.82	1633.46
	7/7/2008			4.95	1631.33
	8/4/2008			5.30	1630.98
	12/14/2009			6.63	1629.65
	12/13/2011			8.50	1627.78
	7/29/2014			3.95	1632.33
MW-4 (Shallow Zone)	7/21/2006	1621.10	1620.68	20.59	1600.09
	8/15/2006			10.59	1610.09
	8/21/2006			10.68	1610.00
	4/23/2007			10.54	1610.14
	5/21/2007			8.96	1611.72
	5/24/2007			9.39	1611.29
	5/30/2007			9.08	1611.60
	7/7/2008			10.58	1610.10
	8/4/2008			10.42	1610.26
	12/14/2009			10.58	1610.10
	12/13/2011			11.02	1609.66
	7/29/2014			11.13	1609.55

Table 1
Groundwater and Surface Water Elevation Data
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Gauging Date	Ground Surface Elevation (feet asl)	Top of Casing Elevation (feet asl)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet asl)
MW-5 (Deeper Zone)	7/21/2006	1666.40	1665.96	52.50	1613.46
	8/15/2006			52.54	1613.42
	8/21/2006			52.62	1613.34
	4/23/2007			51.99	1613.97
	5/21/2007			49.33	1616.63
	5/24/2007			49.75	1616.21
	5/30/2007			49.44	1616.52
	7/7/2008			52.60	1613.36
	8/4/2008			52.61	1613.35
	12/14/2009			52.92	1613.04
	12/13/2011			53.00	1612.96
	7/29/2014			52.75	1613.21
MW-6 (Shallow Zone)	7/21/2006	1659.30	1658.89	DRY	
	8/15/2006			DRY	
	8/21/2006			DRY	
	4/23/2007			DRY	
	5/21/2007			18.16	1640.73
	5/24/2007			18.58	1640.31
	5/30/2007			17.89	1641.00
	7/7/2008			DRY	
	8/4/2008			39.88	1619.01
	12/14/2009			39.95	1618.94
	12/13/2011			40.13	1618.76
	7/29/2014			40.11	1618.78
MW-7 (Alluvial Zone)	7/21/2006	1609.00	1608.62	DRY	
	8/15/2006			24.80	1583.82
	8/21/2006			27.45	1581.17
	4/23/2007			20.15	1588.47
	5/21/2007			17.11	1591.51
	5/24/2007			17.23	1591.39
	5/30/2007			17.58	1591.04
	7/7/2008			21.43	1587.19
	8/4/2008			21.32	1587.30
	12/14/2009			21.75	1586.87
	12/13/2011			22.81	1585.81
	7/29/2014			22.43	1586.19
MW-8 (Alluvial Zone)	4/27/2007	1607.00	1606.50	DRY	
	5/21/2007			14.35	1592.15
	5/24/2007			14.45	1592.05
	5/30/2007			14.45	1592.05
	7/7/2008			19.39	1587.11
	8/4/2008			19.72	1586.78
	12/14/2009			20.90	1585.60
	12/13/2011			22.00	1584.50
	7/29/2014			21.34	1585.16

Table 1
Groundwater and Surface Water Elevation Data
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Gauging Date	Ground Surface Elevation (feet asl)	Top of Casing Elevation (feet asl)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet asl)
MW-9 (Alluvial Zone)	4/27/2007	1610.60	1610.30	29.42	1580.88
	5/21/2007			21.22	1589.08
	5/24/2007			21.56	1588.74
	5/30/2007			21.65	1588.65
	7/7/2008			23.54	1586.76
	8/4/2008			24.35	1585.95
	12/14/2009			24.02	1586.28
	12/13/2011			25.01	1585.29
	7/29/2014			24.76	1585.54
MW-10 (Deeper Zone)	4/27/2007	1664.20	1664.00	DRY	
	5/21/2007			59.62	1604.38
	5/24/2007			46.99	1617.01
	5/30/2007			59.78	1604.22
	7/7/2008			DRY	
	8/4/2008			DRY	
	12/14/2009			DRY	
	12/13/2011			DRY	
	7/29/2014			DRY	
MW-11 (Deeper Zone)	4/27/2007	1664.70	1664.50	DRY	
	5/21/2007			45.70	1618.80
	5/24/2007			49.08	1615.42
	5/30/2007			57.29	1607.21
	7/7/2008			DRY	
	8/4/2008			DRY	
	12/14/2009			DRY	
	12/13/2011			DRY	
	7/29/2014			DRY	
MW-12 (Shallow Zone)	4/27/2007	1664.40	1664.20	DRY	
	5/21/2007			38.51	1625.69
	5/24/2007			36.21	1627.99
	5/30/2007			38.47	1625.73
	7/7/2008			39.51	1624.69
	8/4/2008			DRY	
	12/14/2009			DRY	
	12/13/2011			39.66	1624.54
	7/29/2014			39.55	1624.65
MW-13 (Deeper Zone)	4/27/2007	1664.70	1664.50	DRY	
	5/21/2007			DRY	
	5/24/2007			DRY	
	5/30/2007			DRY	
	7/7/2008			DRY	
	8/4/2008			48.43	1616.07
	12/14/2009			49.64	1614.86
	12/13/2011			49.85	1614.65
	7/29/2014			49.26	1615.24

Table 1
Groundwater and Surface Water Elevation Data
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Gauging Date	Ground Surface Elevation (feet asl)	Top of Casing Elevation (feet asl)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet asl)
MW-14 (Alluvial Zone)	4/27/2007	1605.80	1605.50	DRY	
	5/21/2007			23.39	1582.11
	5/24/2007			25.00	1580.50
	5/30/2007			18.70	1586.80
	7/7/2008			19.96	1585.54
	8/4/2008			20.36	1585.14
	12/14/2009			21.72	1583.78
	12/13/2011			21.71	1583.79
	7/29/2014			21.04	1584.46
MW-15 (Deeper Zone)	4/27/2007	1671.80	1671.50	68.67	1602.83
	5/21/2007			67.01	1604.49
	5/24/2007			67.31	1604.19
	5/30/2007			67.35	1604.15
	7/7/2008			68.42	1603.08
	8/4/2008			68.59	1602.91
	12/14/2009			68.78	1602.72
	12/13/2011			68.93	1602.57
	7/29/2014			68.88	1602.62
MW-16 (Alluvial Zone)	4/27/2007	1601.60	1601.50	15.10	1586.40
	5/21/2007			13.25	1588.25
	5/24/2007			13.37	1588.13
	5/30/2007			13.42	1588.08
	7/7/2008			14.56	1586.94
	8/4/2008			14.84	1586.66
	12/14/2009			15.09	1586.41
	12/13/2011			15.68	1585.82
	7/29/2014			15.07	1586.43
MW-17 (Alluvial Zone)	4/27/2007	1606.20	1606.00	21.44	1584.56
	5/21/2007			17.20	1588.80
	5/24/2007			17.40	1588.60
	5/30/2007			17.42	1588.58
	7/7/2008			20.19	1585.81
	8/4/2008			20.71	1585.29
	12/14/2009			20.75	1585.25
	12/13/2011			21.00	1585.00
	7/29/2014			20.43	1585.57
Tributary at Seep	8/21/2006	NA	1610.10	2.14	1607.96
	4/23/2007			1.95	1608.15
	5/21/2007			1.95	1608.15
	5/30/2007			1.90	1608.20
	7/7/2008			2.01	1608.09
	8/4/2008			2.01	1608.09
	12/14/2009			NM*	NA
	7/29/2014			DRY	
Seep Monitor Point	4/23/2007	NA	1611.90	2.80	1609.10
	5/30/2007			2.34	1609.56
	7/7/2008			3.57	1608.33
	8/4/2008			4.51	1607.40
	12/14/2009			NM*	NA
	7/29/2014			DRY	

Table 1
Groundwater and Surface Water Elevation Data
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Gauging Date	Ground Surface Elevation (feet asl)	Top of Casing Elevation (feet asl)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet asl)
Colorado River	8/21/2006	NA	1585.50	0.38	1585.12
	4/23/2007			0.21	1585.29
	5/30/2007		1590.30	4.43	1585.87
	7/7/2008			4.64	1585.66
	8/4/2008			4.53	1585.70
	12/14/2009			NM*	NA
	7/29/2014			NM*	NA

Notes:

NA	No Data Available
NM	Not Measured
*	Field Personnel unable to locate benchmark/measuring point
asl	above sea level
DRY	Location was dry
btoc	below top of casing

Table 2
Surface Water Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
		Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
LOWER SEEP	7/19/2006	<2	2,400	- -	<2	1,060	<0.5	320	130	38	13	1,000	4,300	2,430
	5/22/2007	<10	308	- -	1.44	1,620	<0.1	321	262	59.6	7.49	778	5,580	3,560
	7/9/2008	<10	264	- -	12.9	2,140	3.5	858	274	66.3	7.09	1,330	8,330	4,660
	12/15/2009	<10	350	- -	3.66	2,730	0.291J	539	419	111	12.1	1,470	9,420	5,840
	12/14/2011	NA	NA	- -	<3.0	7,810	NA	939	NA	NA	NA	NA	NA	13,700
	7/29/2014	DRY												
SW-TRIB-1	7/19/2006	<2	110	- -	<2	1520 / 2,220*	<0.5	599	250	81	15	1,800	7,400	7,410
	5/22/2007	<10	298	- -	2.22	1,920	0.191J	394	396	74.6	5.9	833	6,660	4,060
	7/9/2008	<10	302	- -	6.22	2,240	<0.1	631	371	89.5	10.5	1,030	7,880	5,400
	7/9/2008	<10	306	- -	5.49J	2,210	<0.1	633	363	92.1	10.2	1,020	7,970	5,440
	8/5/2008	<10	283	- -	5.89	2,440	0.242J	632	399	99.9	10.4	1,070	8,510	5,460
	12/15/2009	<10	330	- -	4.48	3,380	0.316J	630	467	127	13.6	1,700	11,200	7,050
	12/14/2011	DRY												
	7/29/2014	DRY												
SW-TRIB-2	7/19/2006	<2	140	- -	<2	1,570	<0.5	621	260	88	17	1,900	7,700	4,840
	7/19/2006	<2	150	- -	<2	1,580	<0.5	631	260	87	16	1,900	7,700	4,840
	5/22/2007	<10	213	- -	2.52	2,130	<0.1	482	317	77.4	7.48	1,000	7,140	4,660
	12/15/2009	<10	229	- -	4.4	3,420	<0.1	682	446	131	11.8	1,740	11,200	7,240
	12/14/2011	DRY												
	7/29/2014	DRY												
SW-TRIB-3	5/22/2007	<10	223	- -	2.96	2,370	0.175J	507	466	130	11.1	1,950	8,250	5,410
	12/15/2009	DRY												
	12/14/2011	DRY												
	7/29/2014	DRY												
SW-TRIB-4	5/22/2007	<10	303	- -	6.38	5,290	<0.1	604	494	117	19.2	3,140	15,600	10,200
	12/15/2009	DRY												
	12/14/2011	DRY												
	7/29/2014	DRY												
SW-TRIB-5	5/22/2007	<10	248	- -	5.56	4,180	<0.1	548	355	97.6	17.2	2,760	13,600	8,820
	12/15/2009	DRY												
	12/14/2011	DRY												
	7/29/2014	DRY												
SW-TRIB-6	5/22/2007	<10	186	- -	6.15	5,300	0.641	575	399	108	11.1	2,940	15,300	9,600
	12/15/2009	DRY												
	12/14/2011	DRY												
	7/29/2014	DRY												

Table 2
Surface Water Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
		Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
SW-CR-50'-Up	7/20/2006	<2	140	--	<2	621	<0.5	1,570	370	140	9.1	380	3,600	3,590
	5/22/2007	<10	188	--	0.656J	222	0.852	319	131	55.2	7.5	130	1,520	1,030
	7/9/2008	<10	125	--	6.77	793	1.66	1,210	311	138	10.1	400	4,300	3,140
	8/5/2008	<10	127	--	1.68	468	1.79	1,370	380	138	6.08	234	3,530	2,970
	8/5/2008	<10	128	--	1.69	478	1.79	1,380	375	137	5.94	230	3,540	2,960
	12/15/2009	<10	159	--	1.26	462	4.76	1,410	460	153	5.55	253	3,720	3,050
	12/14/2011	NA	NA	--	<0.30	478	NA	1,530	NA	NA	NA	NA	NA	2,940
	7/31/2014	<10	130	130	<0.3	55.8	<0.1	73.4	50.6	20.3	7.49	36.9	NA	345
SW-CR-250' Up	5/22/2007	<10	189	--	0.636J	228	0.854	331	128	56.5	6.66	127	1,500	1,000
	12/15/2009	<10	159	--	1.26	458	4.67	1,400	458	150	5.5	249	3,750	3,020
	12/14/2011	NA	NA	--	<0.30	174	NA	528	NA	NA	NA	NA	NA	1,060
	7/31/2014	<10	127	127	<0.3	58.2	<0.1	73.9	45.3	20.1	7.22	37	NA	323
SW-CR-1,000' Up	5/22/2007	<10	190	--	0.655J	229	0.874	336	134	57.8	7.25	138	1,520	1,030
	12/15/2009	<10	170	--	1.3	473	4.8	1,440	465	154	5.58	252	3,720	3,040
	12/14/2011	NA	NA	--	<0.30	473	NA	1,510	NA	NA	NA	NA	NA	2,980
	7/31/2014	<10	138	138	<0.3	57.5	<0.1	74.2	58.8	22.6	7.3	38.1	NA	345
SW-CR-2,500' Up	5/23/2007	<10	206	--	0.809J	351	1.57	629	223	79.9	8.19	191	2,350	1,610
	12/15/2009	<10	170	--	1.7	456	5.25	1,440	483	150	5.47	246	3,690	3,090
	12/14/2011	NA	NA	--	<0.30	475	NA	1,540	NA	NA	NA	NA	NA	3,000
	7/31/2014	Not Sampled												
SW-EC-2,500' Up	5/23/2007	<2	188	--	0.551J	158	0.463J	161	84.2	43.2	7.56	87	1,100	676
	12/15/2009	<10	268	--	2.21	563	5.06	1,350	331.0	208	6.61	386	4,020	3,180
	12/14/2011	NA	NA	--	<0.30	403	NA	1,020	NA	NA	NA	NA	NA	2,350
	7/31/2014	Not Sampled												
SW-CR-50' Down	7/20/2006	<2	140	--	<2	626 / 620*	0.878	1,560	350	140	10	380	3,700	2,580
	5/22/2007	<10	189	--	0.633J	226	<0.5	323	127	54.2	7.08	130	1,520	1,010
	7/9/2008	<10	123	--	7.11	787	1.81	1,200	305	133	10.1	391	4,290	3,220
	8/5/2008	<10	127	--	1.69	478	1.79	1,540	373	137	6.09	235	3,510	2,960
	12/15/2009	<10	157	--	1.27	457	4.69	1,400	444	147	5.77	242	3,710	3,070
	12/14/2011	NA	NA	--	<0.30	470	NA	1,510	NA	NA	NA	NA	NA	2,870
	7/31/2014	<10	131	131	<0.3	57.7	<0.1	75	55.8	20.8	7.36	37.2	NA	332
SW-CR-500' Down	5/23/2007	<10	194	--	0.639J	240	0.866	355	143	59	7.84	132	1,660	1,100
	5/23/2007	<10	195	--	0.609J	240	0.876	351	142	59.7	8.12	136	1,660	1,100
	12/15/2009	<10	164	--	1.27	463	4.58	1,390	456	153	5.51	253	3,780	3,060
	12/14/2011	NA	NA	--	<0.30	462	NA	1,500	NA	NA	NA	NA	NA	2,930
	7/31/2014	<10	143	143	<0.3	90.2	<0.1	106	63.3	29.4	6.87	45.9	NA	469
SW-CR-900' Down	5/22/2007	<10	189	--	0.611J	218	0.835	346	128	55.9	7.12	135	1,500	1,030
	12/15/2009	<10	166	--	1.26	481	4.74	1,440	457	157	5.61	254	3,720	3,060
	12/14/2011	NA	NA	--	<0.30	469	NA	1,490	NA	NA	NA	NA	NA	2,870
	7/31/2014	<10	139	139	<0.3	69.7	<0.1	87.8	56.2	24.2	6.94	38	NA	370

Table 2
Surface Water Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
		Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
SW-CR-1,500' Down	5/23/2007	<10	195	--	0.634J	233	0.894	340	136	55.6	7.67	126	1,610	1,050
	12/15/2009	<10	166	--	1.67	471	4.84	1,430	403	134	5.52	218	3,740	3,040
	12/14/2011	NA	NA	--	<0.30	465	NA	1,470	NA	NA	NA	NA	NA	2,860
	7/31/2014	<10	135	135	<0.3	56.1	<0.1	80.2	52.3	21.3	6.95	33.9	NA	387
	7/31/2014	<10	134	134	<0.3	56.9	<0.1	80.3	53.7	21.1	7.13	34.3	NA	396
SW-CR-2,500' Down	5/23/2007	<10	195	--	0.627J	234	0.879	340	138	57.2	7.89	127	1,610	1,050
	12/15/2009	<10	172	--	1.76	470	4.85	1,430	448	151	5.43	244	3,760	3,090
	12/14/2011	NA	NA	--	<0.30	455	NA	1,440	NA	NA	NA	NA	NA	2,820
	7/31/2014	<10	132	132	<0.3	48.4	<0.1	72.7	54.3	19.5	7.01	31.3	NA	327

Notes:
mg/L = milligrams per liter
-- = Not Analyzed
< = Not Detected at or above listed value (mg/L)
J = Estimated Detection
DRY = Sample station dry during December 2011 sampling event. No sample collected.
DUP = Duplicate Sample
* = Water sample collected July 2007 analyzed for chlorides using Method 300.0 and Method 4500E
umhos/cm = micromhos per centimeter
** = sample damaged during shipping on 12/17/2011, sample should be considered estimated with a likely low bias

Table 3
Groundwater Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Groundwater Zone	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
			Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
			(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
MW-1	Shallow	7/19/2006	<2	380	--	<2	1,550	<0.5	657	330	83	15	1,700	7,500	4,980
Duplicate		7/19/2006	<2	380	--	<2	1,530	2.6	657	330	82	14	1,700	7,300	4,790
		5/24/2007	<10	293	--	2.52	2,290	0.456J	470	478	85.2	5.84	970	7,650	5,260
Duplicate		5/24/2007	<10	291	--	2.59	2,260	0.467J	473	466	86.6	5.59	944	7,610	4,850
		7/8/2008	<10	320	--	12.7	3,020	2.92	876	512	132	10.6	1,500	10,400	7,080
		8/5/2008	<10	300	--	8.58	3,330	1.18	744	521	135	13.1	1,440	11,100	7,380
		12/14/2009	<10	321	--	5.36	4,260	0.347J	663	725	154	16.8	2,030	14,700	8,990
		12/15/2011	NA	NA	--	<3.0	6,480	NA	865	NA	NA	NA	NA	NA	12,500
		7/30/2014	<10	358	358	<3	3,240	<1	634	699	135	14.9J	1,880	NA	8,860
MW-2	Deeper	7/20/2006	<2	310	--	<2	3,860	13	734	1,300	550	59	9,100	3,200 / 4,930	23,300
		5/24/2007	<10	291	--	7.88	6,750	<0.1	736	936	257	14.2	2,960	19,000	13,100
		7/9/2008	<10	291	--	34.5	4,330	<0.1	816	596	177	9.9	1,850	15,700	9,680
		8/5/2008	<10	299	--	6.33	4,110	<0.1	786	588	162	9.91	1,730	14,600	8,970
		12/14/2009	<10	290	--	<3	4,540	<0.1	853	731	211	13	2,140	15,300	9,510
		12/14/2011	NA	NA	--	<3.0	7,940	NA	1,420	NA	NA	NA	NA	NA	15,700
		7/30/2014	<10	223	223	5.14J	6,650	<1	1,550	2,830	610	16.9	2,730	NA	14,700
MW-3	Shallow	7/20/2006	<2	150	--	<2	3,050	19	1,020	820	220	44	5,600	2,000 / 2,000	14,600
		5/24/2007	<10	268	--	12.4	13,300	<0.1	1,250	957	229	22.3	6,370	35,000	23,500
		7/8/2008	<10	265	--	38.9J	18,200	<0.2	1,790	1,720	487	17.2	8,890	56,800	37,600
		8/5/2008	<10	237	--	32.8	21,200	<0.1	1,750	2,180	622	17.8	8,320	61,700	38,000
		12/15/2009	<10	187	--	33.7	27,100	<1	2,110	3,010	830	20.7	12,800	86,300	50,700
Duplicate		12/15/2009	<10	186	--	34.8	27,300	<1	2,120	2,910	803	20.5	12,400	84,100	50,300
		12/14/2011	NA	NA	--	<3.0	26,600	NA	1,980	NA	NA	NA	NA	NA	48,000
		7/30/2014	<10	147	147	16	19,500	<1	1,900	2,020	649J	16.2	10,200	NA	39,500
MW-4	Shallow	7/20/2006	<2	190	--	<2	2,440	16	1,410	920	320	45	3,000	15,000	11,700
		5/24/2007	<10	310	--	2.35	2,160	0.222J	463	592	138	5.85	1,180	7,340	4,860
		7/9/2008	<10	321	--	7.4	4,680	<0.1	1,100	916	243	7.4	1,750	17,300	11,700
		8/5/2008	<10	332	--	7.29	4,650	<0.1	1,170J	996	260	8.32	1,820	17,400	11,100
		12/14/2009	<10	392	--	6.25J	5,180	<1	1,250	1,320	285	12.1	2,280	18,800	11,800
		12/14/2011	NA	NA	--	<3.0	8,700	NA	1,560	NA	NA	NA	NA	NA	18,000
		7/30/2014	<10	392	392	3.45J	4,480	<1	981	803	227	9.59	2,160	NA	10,100
MW-5	Deeper	7/20/2006	<2	300	--	<2	5,920	1,900	554	1,200	510	240	21,000	57,000	38,900
		5/25/2007	<10	246	--	13	10,500	1.15	839	1,040	455	27.3	4,890	25,400	17,000
		7/8/2008	<10	263	--	39.8J	18,400	2.67	1,310	1,830	980	53.8	7,620	56,600	39,100
Duplicate		7/8/2008	<10	264	--	41.6J	19,800	2.16	1,360	1,920	1,000	55.1	7,850	56,300	38,800
		8/6/2008	<10	255	--	30	19,000	1.87J	1,440	1,780	878	63	8,850	58,400	37,000
Duplicate		8/6/2008	<10	259	--	80.2	18,500	16.8	1,360	1,820	894	58.2	8,520	59,800	37,800
		12/15/2009	<10	280	--	28.2	22,700	1.17J	1,390	2,180	1,140	68	9,660	69,800	42,500
		12/14/2011	NA	NA	--	<3.0	23,200	NA	1,250	NA	NA	NA	NA	NA	40,300
		7/29/2014	<10	264	264	79.2	20,200	<1	1,150	2,480	1230	70.1	10,500	NA	52,200

Table 3
Groundwater Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

Sample Location	Groundwater Zone	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
			Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
			(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
MW-6	Shallow	5/25/2007	<10	280	--	14.3	10,600	6	785	1,360	303	25.6	4,840	29,300	20,300
		12/15/2009	DRY												
		12/14/2011	DRY												
		7/29/2014	DRY												
MW-7	Alluvial	8/15/2006	<2	290	--	<2	1,880	<0.5	1,840	1,000	530	19	990	110,000 / 4,350	54,600 / 8,600
		5/23/2007	<10	449	--	2.78	2,350	0.26J	404	427	124	5.82	1,100	7,860	5,180
		7/8/2008	<10	257	--	10.1	6,140	<0.1	1,520	1,450	652	14.5	1,520	21,800	16,400
		8/5/2008	<10	253	--	9.25	6,700	0.181J	1,390	1,350	603	14.3	1,440	22,600	15,400
		12/14/2009	<10	261	--	13.3	12,000	<1	1,700	2,620	1,420	21.4	2,720	38,400	26,000
		12/14/2011	NA	NA	--	<3.0	16,600	NA	1,740	NA	NA	NA	NA	NA	34,600
		7/30/2014	<10	324	324	8.69J	11,000	<1	1,930	2,310	1290	20.3	2,980	NA	23,900
MW-8	Alluvial	5/23/2007	<10	482	--	2.03	1,750	0.672	301	271	69.2	2.97	917	6,190	3,940
		7/9/2008	<10	410	--	11	1,930	1.55	409	374	130	5	742	6,820	4,800
		8/5/2008	<10	401	--	3.04	1,750	0.208J	420	358	129	5.36	702	6,290	4,170
		12/14/2009	<10	354	--	6.61J	5,300	<1	1,930	1,520	749	15.5	1,640	19,400	13,400
		12/14/2011	NA	NA	--	<3.0	12,300	NA	2,380	NA	NA	NA	NA	NA	25,000
		7/30/2014	<10	416	416	6.40J	7,920	<1	2,370	1,720	1350	18.2	2,190	NA	22,800
MW-9	Alluvial	5/25/2007	<10	213	--	7.21	6,280	<0.1	1,520	1,350	612	29.7	1,880	17,300	12,500
		7/8/2008	<10	245	--	10	6,540	0.14J	1,690	1,310	561	22.1	1,810	23,600	15,700
		8/5/2008	<10	247	--	9.34	6,320	0.156J	1,590	1,300	552	22	1,790	22,400	15,000
		12/14/2009	<10	228	--	7.2J	6,750	<1	1,750	1,720	663	23.7	1,970	22,900	15,700
Duplicate		12/14/2009	<10	230	--	6.99J	6,680	<1	1,710	1,710	655	23.8	1,920	22,800	15,000
		12/14/2011	NA	NA	--	<3.0	11,600	NA	2,150	NA	NA	NA	NA	NA	23,000
Duplicate		12/14/2011	NA	NA	--	<3.0	11,700	NA	2,170	NA	NA	NA	NA	NA	24,000
		7/30/2014	<10	275	275	7.70J	9,930	<1	2,040	2,620	1120	26.4	2,960	NA	19,700
MW-10	Deeper	5/25/2007	<10	344	--	2.3	670	0.345J	41	193	19.1	1.44	270	2,400	1,450
		12/15/2009	DRY												
		12/14/2011	DRY												
		7/29/2014	DRY												
MW-11	Deeper	5/25/2007	<10	321	--	0.699J	516	<0.1	229	258	69.6	6.31	157	2,380	1,480
		12/15/2009	DRY												
		12/14/2011	DRY												
		7/29/2014	DRY												
MW-12	Shallow	5/22/2007	<10	293	--	6.18	4,610	0.79	376	662	271	11	1,810	14,000	9,090
		5/25/2007	<10	397	--	3.42	1,000	1.74	91.7	223	62.9	3.79	483	3,450	2,100
		12/15/2009	DRY												
		12/14/2011	DRY												
		7/30/2014	NA	NA	NA	NA	NA	NA	NA	2,070	862	17.9	3,850	NA	NA
MW-13	Deeper	8/6/2008	<10	213	--	7.33	2,330	0.852	1,280	500	360	10.8	850	8,870	6,030
		12/15/2009	<10	145	--	3.43	2,060	<0.1	1,620	459	345	10.6	941	8,390	5,920
		12/14/2011	NA	NA	--	<0.30	1,180	NA	2,010	NA	NA	NA	NA	NA	4,990
		7/30/2014	<10	198	198	<3	1,140	<1	2,020	357	279	9.4	856	NA	4,670
Duplicate		7/30/2014	<10	200	200	<3	1,160	<1	2,080	391	284	9.65	878	NA	4,680

Table 3
Groundwater Data Summary
Railroad Commission of Texas
Ballinger Seep, Ballinger, Texas

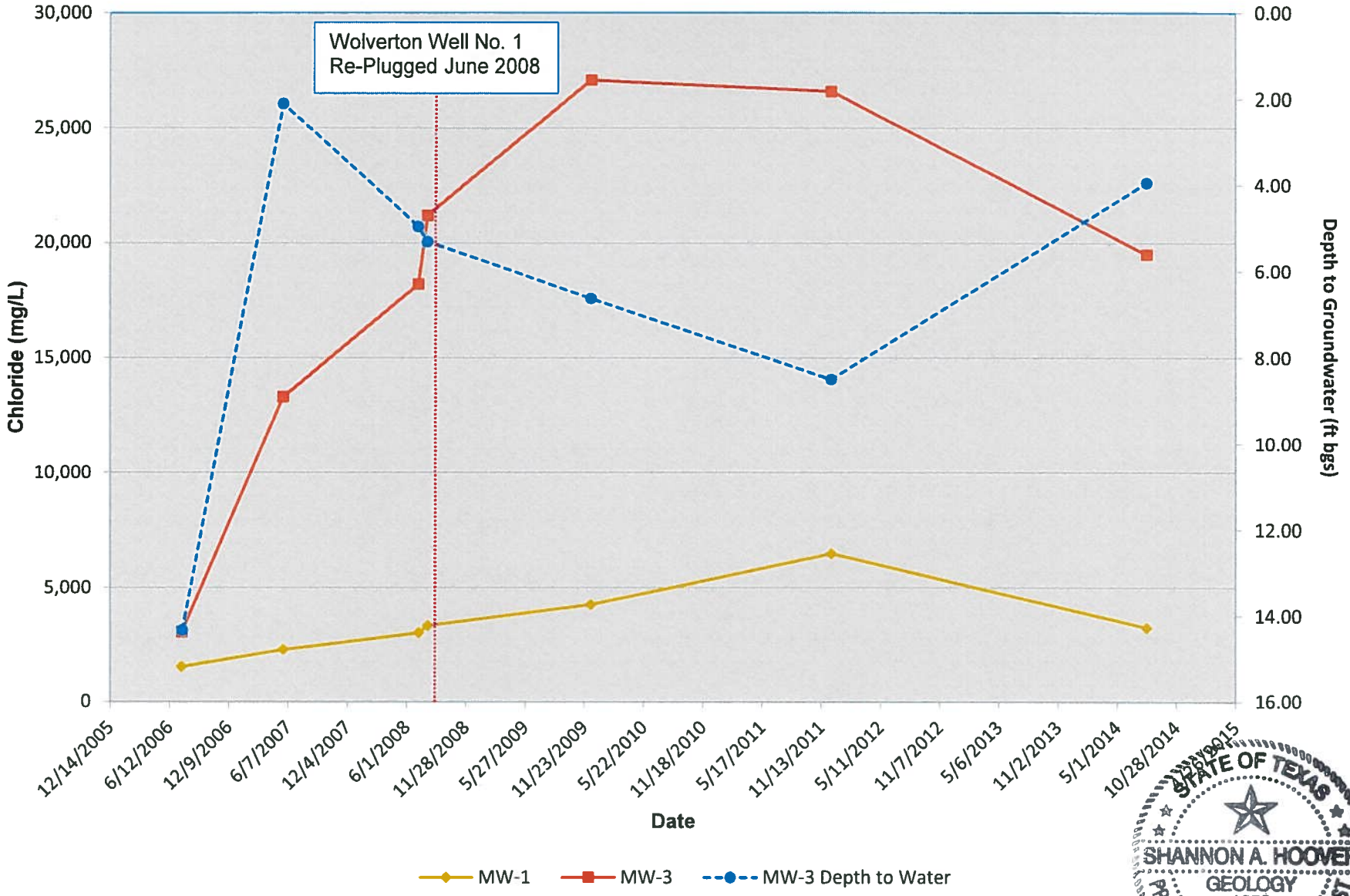
Sample Location	Groundwater Zone	Date	Anions							Cations				Conductivity Result / Rerun	Total Dissolved Solids
			Alkalinity, Carbonate	Alkalinity, Bicarbonate	Alkalinity, Total	Bromide	Chloride	Nitrate	Sulfate	Calcium	Magnesium	Potassium	Sodium		
			(mg/L)	(mg/L)		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(umho/cm)	(mg/L)
MW-14	Alluvial	5/23/2007	<10	227	--	0.798J	793	<0.1	1,400	433	194	11.5	328	4,440	3,380
		12/14/2009	<10	562	--	11.4	8,570	<1	3,290	2,790	1540	20.4	2,950	31,800	19,800
		12/14/2011	NA	NA	--	<3.0	10,800	NA	4,160	NA	NA	NA	NA	NA	23,100
		7/30/2014	<10	444	444	70.6	9,090	<1	2,780	2,220	1780	21.4	3,280	NA	25,400
Duplicate		7/30/2014	<10	447	447	69.8	9,180	<1	2,740	1,820	1740	20.8	3,180	NA	20,800
MW-15	Deeper	5/25/2007	<10	239	--	0.964J	484	<0.1	1,280	234	146	8.04	375	3,490	2,690
		12/15/2009	DRY												
		12/14/2011	DRY												
		7/31/2014	<10	335	335	<3	2,980	<1	1,180	898	603	15.4	1,590	NA	7,300
MW-16	Alluvial	5/24/2007	<10	179	--	5.32	4,930	<0.1	1,120	888	381	25.6	1,630	14,800	11,300
		7/9/2008	<10	264	--	6.37	8,630	<0.1	1,500	1,630	623	11	2,910	30,000	21,100
		8/6/2008	<10	248	--	11.6	7,990	0.252J	1,410	1,480	614	12.1	2,620	26,900	16,800
		12/15/2009	<10	237	--	10.8	11,000	<1	2,220	2,380	1,170	19	2,980	34,600	22,800
		12/14/2011	NA	NA	--	<3.0	10,900	NA	1,730	NA	NA	NA	NA	NA	23,700
		7/30/2014	<10	260	260	72.1	9,220	<1	1,610	2,130	905	16.4	3,510	NA	21,300
MW-17	Alluvial	5/24/2007	<10	313	--	<0.3	37	0.876	272	80.3	47.1	1.32	98.3	1,130	740
		12/15/2009	<10	341	--	<3	2,700	<1	2,650	2,240	522	13.7	1,320	10,900	8,030
		12/14/2011	NA	NA	--	<0.30	1,910	NA	2,400	NA	NA	NA	NA	NA	6,940
		7/29/2014	<10	437	437	6.43	1,510	<0.1	2,370	1,100	360	9.52	675	NA	4,530

Notes:

mg/L = milligrams per liter
< = Not Detected at or above listed value (mg/L)
* = Field duplicate
J = Estimated Detection
DRY = Sample station dry during December 2009 sampling event. No sample collected.
umhos/cm = micromhos per centimeter

GRAPHS

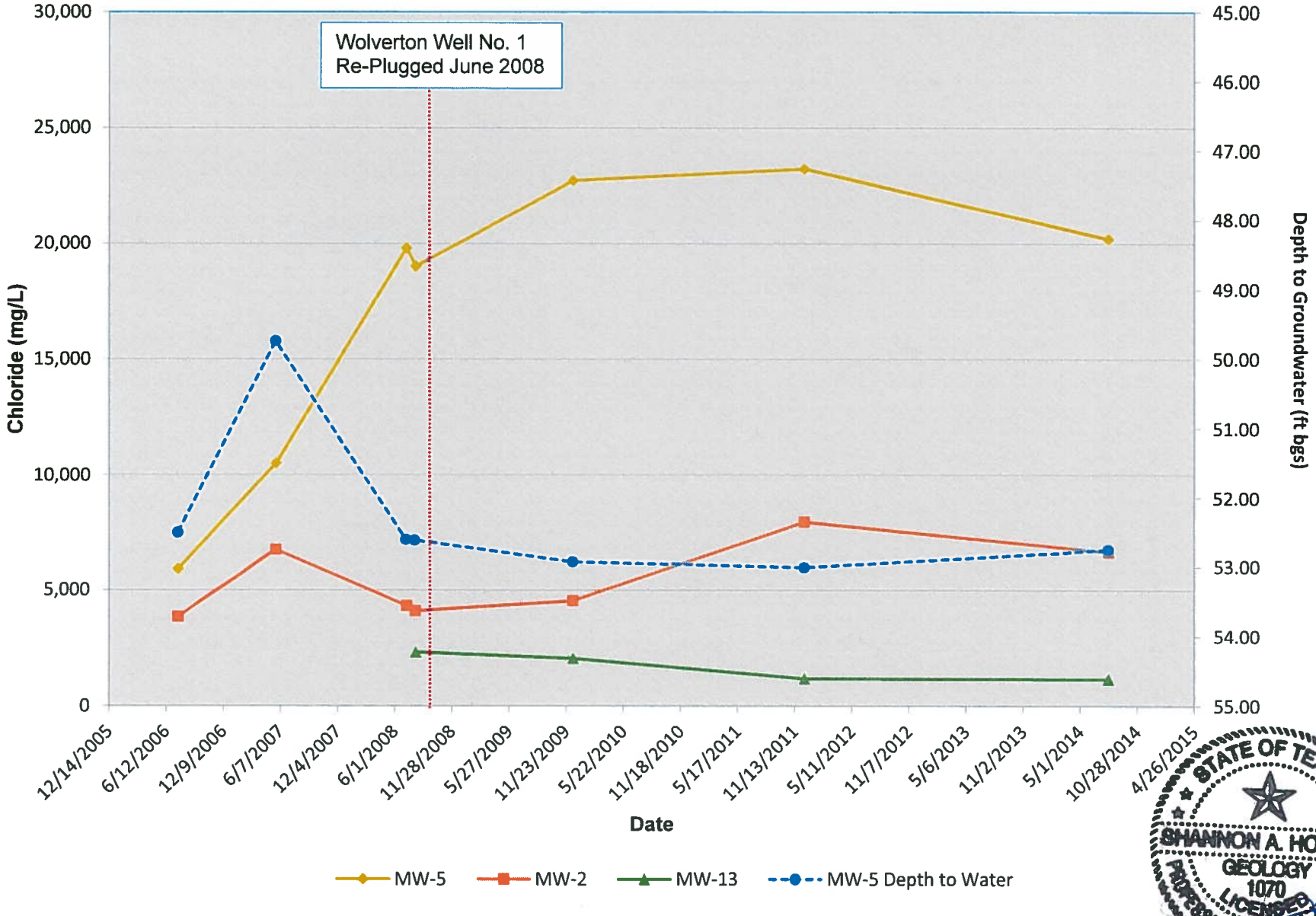
GRAPH 1. Chloride Concentrations in the Shallow Groundwater Zone

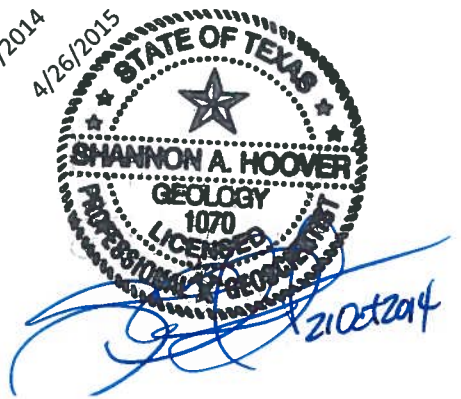


STATE OF TEXAS
SHANNON A. HOOVER
GEOLOGY
1070
LICENSED
PROFESSIONAL GEOSCIENTIST

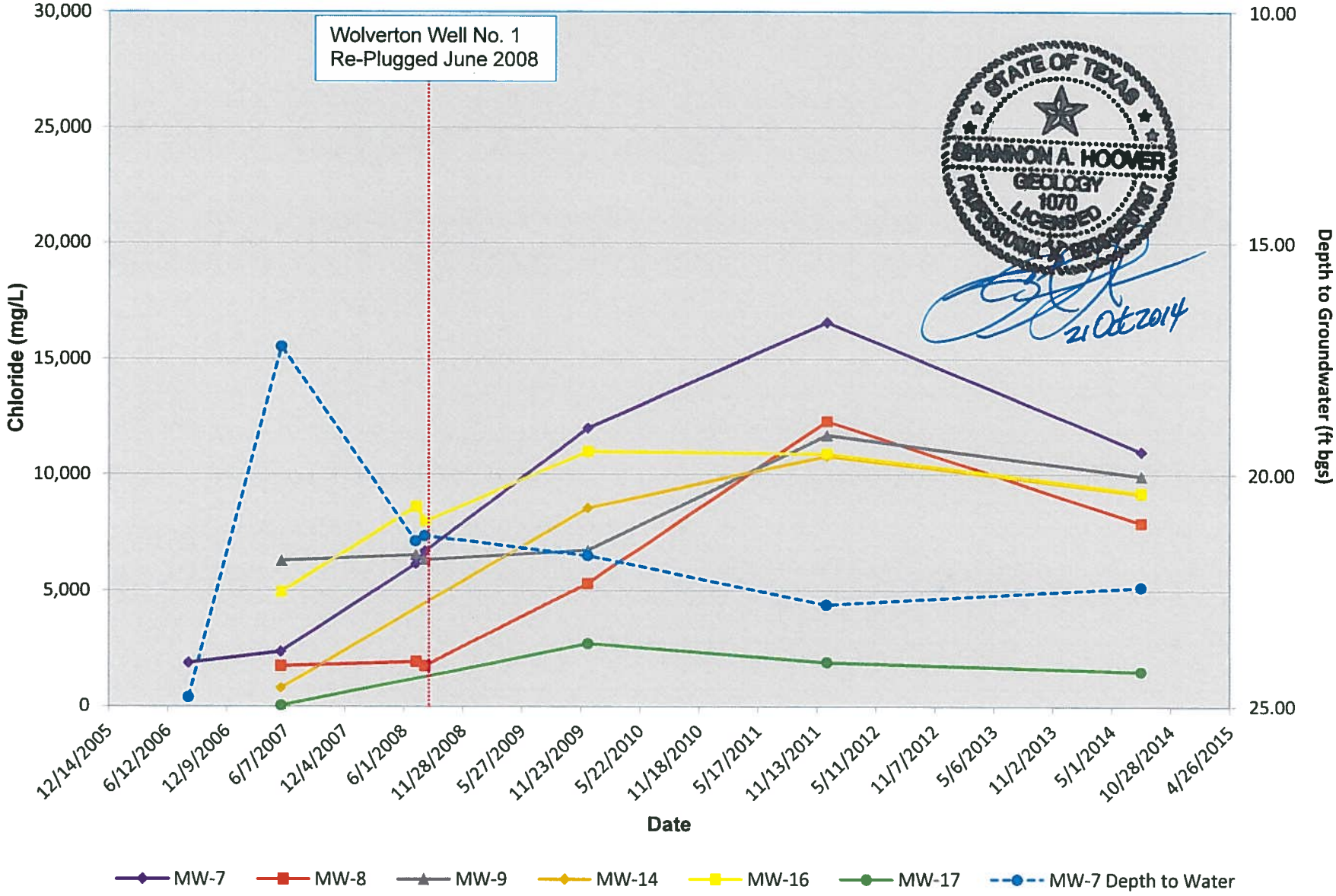
21 Oct 2014

GRAPH 2. Chloride Concentrations in the Deeper Groundwater Zone





GRAPH 3. Chloride Concentrations in the Alluvial Groundwater Zone



ATTACHMENT 1

Field Forms

GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW - 1	
Client	RRC	
Site	Bellinger	

Depth to Water (ft)	Before Sampling	9.34	Sample Collection Time	1405
	After Sampling	—	Purge Method	bailed
Total Depth (ft)		14.23	Sample Method	Grab
Standing Water Column (ft)		4.89	Water Description	Clear w/ some sediment at bottom
One Purge Volume (gal)		0.8	Sampling Personnel	J [illegible]

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/30/14	1:58	0.5	0.5	—	6.64	26.3	11890	0.00001010	20		
7/30/14	2:04 ~~[illegible]~~	1.5	2	—	6.70	23.9	10950	9194	-16		
7/30/14	2:03	2.5	5	—	6.74	23.8	10470	8784	-17		

Form Date [illegible]/24/07 Initial [signature] Date 30 Jul 14 Page ___ [initials] 8.1.14

GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-2
Client	RRC
Site	Billings

Depth to Water (ft)	Before Sampling	19.62	Sample Collection Time	1350
	After Sampling	—	Purge Method	bailer
Total Depth (ft)		49.90	Sample Method	grab
Standing Water Column (ft)		30.28	Water Description	Tan w/ some sediment
One Purge Volume (gal)		4.9	Sampling Personnel	J Cotton

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	1:15	2.5	2.5	—	6.72	26.7	12820	0.0001100	47		
7/30/14	1:20	1	3.5	—	6.67	22.8	17570	0.0001189	33		
7/30/14	1:24	1	4.5	—	6.67	23.8	14030	0.0001226	31		
7/30/14	1:28	1.5	6	—	6.72	22.9	14710	0.0001280	9		
7/30/14	1:31	1.5	7.5	—	6.75	24.0	13050	0.0001327	-0		
7/30/14	1:36	1.5	9	—	6.77	23.5	15850	0.0001410	-0		
7/30/14	1:41	1.5	10.5	—	6.82	23.2	15080	0.0001640	-19		
7/30/14	1:46	1.5	12	—	6.67	22.8	18170	0.0001645	-0		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-3
Client	RRC
Site	Billinger

Depth to Water (ft)	Before Sampling	3.95	Sample Collection Time	1300
	After Sampling	—	Purge Method	bail
Total Depth (ft)		15.06	Sample Method	grab
Standing Water Column (ft)		11.11	Water Description	Tan w/ some sediment
One Purge Volume (gal)		1.8	Sampling Personnel	J Crump

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/30/14	12:52	2	2		6.71	28.8	44300	0.00046B3	46		
7/30/14	12:56	2	4		6.69	26.3	46000	0.0004820	41		
7/30/14	12:58	1	5		6.67	25.6	45600	0.0004828	41		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-4
Client	RRC
Site	Ballinger

Depth to Water (ft)	Before Sampling	11.13	Sample Collection Time	1430
	After Sampling	—	Purge Method	bail
Total Depth (ft)		19.82	Sample Method	grab
Standing Water Column (ft)		8.69	Water Description	Grey w/ little sediment
One Purge Volume (gal)		1.4	Sampling Personnel	J Wood

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	2:20pm	1	1		6.61	26.9	10450	8711	531		
7/30/14	2:25pm	2	3		6.43	23.3	13860	0.0000 1208	-33		
7/30/14	2:27pm	1	4		6.57	24.1	14070	0.0000 1223	-45		
			Dry								

GROUNDWATER SAMPLING FORM

TRC

		Sample Location	MW-5
		Client	RRC
		Site	Bellinger
Depth to Water (ft)	Before Sampling	52.75	Sample Collection Time	1630
	After Sampling	—	Purge Method	bail
Total Depth (ft)		55.09	Sample Method	same
Standing Water Column (ft)		2.34	Water Description	Clear to tan, no odor
One Purge Volume (gal)		0.4	Sampling Personnel	J Wang

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/25/14	1606	0.2	0.2	—	6.40	29.0	5020	53.80	-66		
	1608	0.2	0.4	—	6.43	25.5	4657	49.29	-31		
	1613	0.7	1.1	—	6.42	26.2	5203	56.80	-3		
			DRY								

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-7
Client	RRL
Site	Ballinger

Depth to Water (ft)	Before Sampling	22.43	Sample Collection Time	1235
	After Sampling	—	Purge Method	bail
Total Depth (ft)		30.02	Sample Method	grab
Standing Water Column (ft)		7.89	Water Description	Black w/ Root matter
One Purge Volume (gal)		1.3	Sampling Personnel	JC

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	12:20	0.2	0.2	—	6.54	26.1	26960	0.0002610	-71		
7/30/14	12:25	1.8	2	—	6.52	24.3	26200	0.0002546	-69		
7/30/14	12:29	1	3	—	6.45	23.3	26590	0.0002573	-70		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-8
Client	RRC
Site	Ballinger

Depth to Water (ft)	Before Sampling	21.34	Sample Collection Time	1205
	After Sampling	—	Purge Method	bail
Total Depth (ft)		23.01	Sample Method	sub
Standing Water Column (ft)		1.67	Water Description	Black Murky w/ sulfur odor (Rotten)
One Purge Volume (gal)		0.3	Sampling Personnel	J Wapp

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	11:55	0.1	0.1		6.67	24.4	19320	0.0001782	-94		
7/30/14	11:58	0.4	0.5		6.62	22.1	17360	0.0001530	-70		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC	Sample Location	MW-9	
	Client	RRC	
	Site	Billings	

Depth to Water (ft)	Before Sampling	24.76	Sample Collection Time	1500
	After Sampling	—	Purge Method	bail
Total Depth (ft)		31.67	Sample Method	grab
Standing Water Column (ft)		6.91	Water Description	Grey w/ some sediment
One Purge Volume (gal)		1.1	Sampling Personnel	J Lyons

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/30/14	2:43	1	1		6.43	24.4	24260	0.0002310	-58		
7/30/14	2:46	1	2		6.27	22.9	24520	0.0002352	-61		
7/30/14	2:49	1.5	3.5		6.43	22.7	25010	0.0002383	-50		
7/30/14	2:53	1.5	5		6.36	22.3	24760	0.0002356	-34		
7/30/14	2:55	0.5	5.5		6.36	22.0	24610	0.0002352	-24		
			Dry								

GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-12
Client	RRC
Site	Bullinger

Depth to Water (ft)	Before Sampling	39.55	Sample Collection Time	DRY
	After Sampling	—	Purge Method	bail
Total Depth (ft)		39.92	Sample Method	DRY
Standing Water Column (ft)		0.37	Water Description	Clear no odor
One Purge Volume (gal)		0.1	Sampling Personnel	J Lucas

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	8:35 am	0.01	0.01 Dry	—	6.0	23.3	25170	0.000237	90		

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-13		
Client	RRC		
Site	Ballinger		
Depth to Water (ft) Before Sampling	49.26	Sample Collection Time	1515
Depth to Water (ft) After Sampling	—	Purge Method	bail
Total Depth (ft)	70.05	Sample Method	grab
Standing Water Column (ft)	20.79	Water Description	Clear no odor
One Purge Volume (gal)	3.4	Sampling Personnel	J Lomo

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	9:08	1.5	1.5		6.89	22.3	4536	3488	38		
7/30/14	9:13	1	2.5		6.81	22.2	4245	3246	47		
7/30/14	9:20	1.5	4		6.89	22.0	4498	3465	47		
7/30/14	9:24	1	5		6.9	21.9	4672	3601	45		
7/30/14	9:31	1.5	6.5		7.03	22.0	5114	3965	37		
7/30/14	9:35	1	7.5		7.00	22.1	5293	4134	14		
7/30/14	9:40	1.5	9		7.04	22.2	5511	4325	-29		
7/30/14	9:46	1.5	10.5		7.14	22.5	6001	4736	-51		
7/30/14	9:52	1	11.5		7.29	22.4	6339	5048	-36		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-14		
Client	RRC		
Site	Bellinger		
Depth to Water (ft) — Before Sampling	21.04	Sample Collection Time	1145
Depth to Water (ft) — After Sampling	—	Purge Method	bail
Total Depth (ft)	29.46	Sample Method	grab
Standing Water Column (ft)	8.42	Water Description	Gray, turbid
One Purge Volume (gal)	1.4	Sampling Personnel	J [illegible]

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/30/14	11:24	0.4	0.4		6.54	25.5	23510	0.00002243	-82		
7/30/14	11:27	2	2.4		6.63	23.1	24030	0.00002316	-75		
7/30/14	11:31	1.6	4		6.60	22.5	24390	0.00002365	-69		
7/30/14	11:36	1.5	5.5		6.60	21.7	24800	0.00002411	-69		
7/30/14	11:39	1	6.5		6.62	22.0	25000	0.000024.22	-62		
			Dry								

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GROUNDWATER SAMPLING FORM

TRC

		Sample Location	MW-15
		Client	RRC
		Site	Ballinger
Depth to Water (ft)	Before Sampling	68.88	Sample Collection Time	1615, 7/31/14
	After Sampling	—	Purge Method	bail
Total Depth (ft)		69.95	Sample Method	grab
Standing Water Column (ft)		1.07	Water Description	Clear, sandy
One Purge Volume (gal)		0.2	Sampling Personnel	J WARD

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/29/14	1541	0.1	0.1	—	6.45	28.7	1310	11.15	8		

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GROUNDWATER SAMPLING FORM

TRC

Sample Location	MW-16
Client	RRC
Site	Billings

Depth to Water (ft)	Before Sampling	~~17.42~~ 15.07	Sample Collection Time	1058
	After Sampling	—	Purge Method	bail
Total Depth (ft)		17.41	Sample Method	grab
Standing Water Column (ft)		2.34	Water Description	Grey turbid
One Purge Volume (gal)		0.4	Sampling Personnel	JS LWM

Date	Time	Purge Volume (gal) This Period	Purge Volume (gal) Cumulative	Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
7/30/14	10:35	0.3	0.3		6.53	24.1	~~[illegible]~~ 24330	0.0002334	-30		
~~7/30/14~~	~~10:43~~	~~4~~	~~4.3~~								
7/30/14	10:43	1	1.3 Dry		6.55	22.2	24360	0.0002360	-45		

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GROUNDWATER SAMPLING FORM

TRC		Sample Location	MW-17	
		Client	RRC	
		Site	B. Hayes	
Depth to Water (ft)	Before Sampling	20.43	Sample Collection Time	1455
	After Sampling	—	Purge Method	Bail
Total Depth (ft)		21.40	Sample Method	Grab
Standing Water Column (ft)		0.97	Water Description	Grey brown Turbid
One Purge Volume (gal)		0.2	Sampling Personnel	J. LAND

Date	Time	Purge Volume (gal)		Depth to Water (ft)	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
		This Period	Cumulative								
7/29/14	1448	0.2	0.2	—	6.74	31.8	7120	5632	-67		
			DRY								

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SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-1000' UP
	Client	RRC
	Site	Ballinger
Sample Collection Time	1530	
Sample Method	Grab	
Water Description	brown	
Sampling Personnel	J Lyons	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1520	8.35	28.05	645	396	67.1

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-250' UP
	Client	BRC
	Site	Bullinger
Sample Collection Time	1415	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J LIARD	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1410	8.21	28.10	636	390	64.8

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-50' UP
	Client	BRC
	Site	Bellinger
Sample Collection Time	1350	
Sample Method	Grab	
Water Description	Brown	
Sampling Personnel	J WARD	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1345	8.13	28.19	628	385	103.6

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR - 50' Down
	Client	BRC
	Site	Billinger
Sample Collection Time	1380	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J Wilson	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1305	8.14	28.27	645	394	320

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-500' Down
	Client	RRC
	Site	Bullinger
Sample Collection Time	1230	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J Wilson	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1225	7.76	28.25	854	511	92.4

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-900' Down
	Client	RRC
	Site	Billinger
Sample Collection Time	1130	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J Lamb	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1125	7.80	27.53	712	441	107.8

SURFACE WATER SAMPLING FORM

TRC	Sample Location	CR - 1500' Down
	Client	RRC
	Site	Bullfrog
Sample Collection Time	1040	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J Wilson	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	1035	7.80	29.13	654	401	54.8

SURFACE WATER SAMPLING FORM

TRC		
	Sample Location	CR-2500' DOWN
	Client	RRC
	Site	Bullinger
Sample Collection Time	1000	
Sample Method	grab	
Water Description	brown	
Sampling Personnel	J Wood	

Date	Time	pH (SU)	Temp (C)	Conductivity (u-siemens/cm)	TDS (ppm)	ORP (mV)
7/31/14	0950	6.89	28.35	6.14	376	71.0

Date: 7/31/14 Time: 0840 Employee name: J LAIRD

Battery Voltage: 100% Sonde Type and Serial No. YSI 6920 SN#131 103325

Calibration

Function	Temp. of Standard	Value of Standard	Initial Reading	Calibrated to	Comments
Specific conductance ≥1,000 µS/cm	24.86	1413	1338	1413	Zero Check ☐Pass ☐Fail; Value =
Conductivity cell constant			4.92203		Range 5.0 ± 0.5
pH calibrated (~7)	24.07	7.0	7.60	7.00	
pH mv for pH 7 solution			-19.7		Range 0 ± 50 mv
pH slope (~ 4/10)	—	—	-0.83	—	
pH mv for pH 10 pH mv for pH 4			-180.2 150.2		Range: -130 to -230 mv Range: 130 to 230 mv
Dissolved oxygen (%sat) *	22.95	100%	96.7%	94.9%	
Dissolved oxygen charge			NA		Range 25 to 75
Dissolved oxygen gain			1.01402		Range 0.7 to 1.4
Optional Sensors (include parameter: turbidity, etc.) NA	—	—	—	—	
	—	—	—	—	

DATA NEEDED FOR DISSOLVED OXYGEN CALIBRATION

Altitude (A) = 1659 feet above msl Barometric pressure 30.02 inches 762.6 mm

Barometric Pressure (BP) Options	Barometric Pressure Formulas
Barometer	Barometric pressure (inches) ____ × 25.4 = BP ____ mm
From local source after correction (CBP)	BP 720.1 mm = CBP 762.6 mm – 2.5 (altitude 1659 /100)
Estimated from altitude only	BP ____ mm= 760 mm - 2.5 (altitude ____ /100)
DO % saturation standard calculation * 94.75	**DO% sat Standard = Absolute BP mm Hg/760 × 100**

Deployment Checklist (required for data logging only) NA

Logging interval: ~~Yes~~ ~~No~~	SDI-12 Autosleep enabled: ~~Yes~~ ~~No~~	RS 232 autosleep enabled: ~~Yes~~ ~~No~~	DO warm-up time:	Battery volts in Sonde (days):	Available memory in Sonde (days):

Post-Calibration Check

Date: 7/31/14 Time: 1630 Employee Name: JOSH LAIRD

Battery Voltage: 100% Sonde Type and Serial No. YSI 6920 SN# 131 103325

Function	Temp. of Standard	Value of Standard	Initial Reading	Pass Post-Cal?	Comments
Specific conductance	28.85	1413	1464	☑Yes ☐No	—
pH calibrated (~7)	28.70°C	7.00	7.02	☑Yes ☐No	—
pH slope (~ 4/10)	28.84/24.95°	4.00/10	4.01/9.91	☑Yes ☐No	—
Dissolved oxygen (%sat) *	33.68	100%	93.1%	☑Yes ☐No	—
Optional Sensors (include parameter: turbidity, etc.)	NA	NA	NA	~~☐Yes ☐No~~	—
				~~☐Yes ☐No~~	—

Location of Deployment, Routine Run, or Special Study: B. Wenger Date/Time Deployed: 7/31/14 0800 Date/Time Retrieved: 8/5/14 1300

Use(circle one): 24-hour Continuous (Grab)

MAINTENANCE—Refer to Chapter 8 for maintenance requirements—Perform temperature check along with regular maintenance. The laboratory thermometer must be checked against NIST traceable thermometer annually.

Sensor	Date	Initials	Maintenance Completed
pH			
DO			
Specific Conductance			

Annual NIST traceable check	Date:	NIST Temp:	Lab Thermometer Temp:	Correction Factor:
Maintenance temperature check	Date:	Sonde Temp:	Lab Thermometer Temp:	

Factory maintenance/repair notes:

31 July 2014

Table 3.6. Streamflow (discharge) measurement form.

Streamflow (Discharge) Measurement Form

Stream: Colorado River 500' DOWN Date: 7/31/14
Station
Description: 4' deep straight section
Time Begin: 1235 Time End: 1300 Meter Type: Flo-Mate 2000
Observers: I WANO Total Stream Width: 80' Section Width (W): 4'
Observations:

Section Midpoint (ft)	Section Depth (ft) (D)	Sensor Depth (ft)	Velocity (V) At Point (ft/s)	Velocity (V) Average (ft/s)	Flow (Q) (ft^3/s) Q = (W)(D)(V)
78	0.5	0.3	-0.28	-0.28	-0.56
74	1.4	0.84	-0.04	-0.04	-0.224
70	1.5	0.90	-0.09	-0.09	-0.54
66	2.2	1.32	0.05	0.05	0.44
62	2.3	1.38	-0.04	-0.04	-0.368
58	2.6	80 0.52	-0.09	-0.075	-0.78
		20 2.08	-0.06		
54	2.6	0.52	-0.07	-0.055	-0.572
		2.08	-0.04		
50	2.5	1.1	-0.04	-0.04	-0.4
46	3.0	0.6	-0.04	-0.05	-0.6
		2.4	-0.06		
42	3.6	0.72	-0.14	-0.09	-1.296
		2.88	-0.04		
38	4.0	0.8	-0.06	-0.06	-0.96
		3.2	-0.06		
34	4.0	0.8	-0.08	-0.07	-1.12
		3.2	-0.06		
30	4.0	0.8	-0.06	-0.055	-0.88
		3.2	-0.05		
26	4.0	0.8	-0.06	-0.06	-0.96
		3.2	-0.06		
22	4.0	0.8	-0.07	-0.06	-0.96
		3.2	-0.05		
18	4.0	0.8	-0.08	-0.07	-1.12
		3.2	-0.06		
14	3.4	0.68	-0.04	-0.04	-0.544
		2.72	-0.04		
10	1.5	0.90	-0.06	-0.06	-0.36
6	1.0	0.60	-0.06	-0.06	-0.24
2	0.5	0.30	-0.04	-0.04	-0.08
					~~12.124~~
$m^3/s \times 35.3 = ft^3/s$			Total Flow (Discharge)		-12.124

TCEQ-20117 (Rev. 04-22-2004)

Table 3.6. Streamflow (discharge) measurement form.

Streamflow (Discharge) Measurement Form

Stream: Colorado 1000 OP Date: 7/31/14
Station
Description: Shallow straight section
Time Begin: 1535 Time End: 1550 Meter Type: Flo-mate 2000
Observers: J Wilson Total Stream Width: 71 Section Width (W): 3
Observations:

Section Midpoint (ft)	Section Depth (ft) (D)	Sensor Depth (ft)	Velocity (V)		Flow (Q) (ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)	Average (ft/s)	
69.5	0.5	0.3	-0.05	-0.05	-0.075
66.5	0.7	0.42	0.01	0.01	0.021
63.5	0.7	0.42	-0.01	-0.01	-0.021
60.5	0.7	0.42	0.03	0.03	0.063
57.5	0.7	0.42	0.05	0.05	0.105
54.5	0.7	0.42	0.05	0.05	0.105
51.5	0.7	0.42	0.02	0.02	0.042
48.5	0.7	0.42	-0.03	-0.03	-0.063
45.5	0.7	0.42	0.00	0.00	0.00
42.5	0.7	0.42	0.02	0.02	0.042
39.5	0.7	0.42	0.03	0.03	0.063
36.5	0.7	0.42	0.00	0.00	0.00
33.5	0.6	0.36	0.02	0.02	0.036
30.5	0.7	0.42	0.03	0.03	0.063
27.5	0.6	0.36	0.01	0.01	0.018
24.5	0.5	0.30	-0.02	-0.02	-0.030
21.5	0.5	0.30	0.03	0.03	0.045
18.5	0.5	0.30	0.00	0.00	0.00
15.5	0.5	0.30	-0.01	-0.01	-0.015
12.5	0.4	0.24	-0.02	-0.02	-0.024
9.5	0.4	0.24	0.00	0.00	0.00
$m^3/s \times 35.3 = ft^3/s$			Total Flow (Discharge)		

TCEQ-20117 (Rev. 04-22-2004)

Table 3.6. Streamflow (discharge) measurement form.

Streamflow (Discharge) Measurement Form

Stream: Colorado 1000' up Creek Date:
Station
Description:
Time Begin: Time End: Meter Type:
Observers: Total Stream Width: Section Width (W):
Observations:

Section Midpoint (ft)	Section Depth (ft) (D)	Sensor Depth (ft)	Velocity (V)		Flow (Q) (ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)	Average (ft/s)	
6.5'	0.4	0.24	0.00	0.00	0.00
3.5'	0.3	0.18	-0.01	-0.01	-0.009
0.5'	0.1	0.1'	-0.03	-0.03	-0.009
$m^3/s \times 35.3 = ft^3/s$			Total Flow (Discharge)		0.357

TCEQ-20117 (Rev. 04-22-2004)

Table 3.6. Streamflow (discharge) measurement form.

Streamflow (Discharge) Measurement Form

Stream: Colorado at tributary Date: 7/31/14
Station
Description: Narrow section near stream outlet.
Time Begin: 1315 Time End: 1340 Meter Type: Flo-Mate 2000
Observers: JWARD Total Stream Width: 54 Section Width (W): 2'
Observations:

Section Midpoint (ft)	Section Depth (ft) (D)	Sensor Depth (ft)	Velocity (V)		Flow (Q) (ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)	Average (ft/s)	
53	0.8	0.48	~~-0.11~~	-0.11	-0.176
51	1.0	0.60	0.06	0.06	0.12
49	1.4	0.84	-0.02	-0.02	-0.056
47	1.4	0.84	-0.03	-0.03	-0.084
45	1.2	0.72	-0.03	-0.03	-0.072
43	1.2	0.72	-0.03	-0.03	-0.072
41	1.5	0.90	-0.01	-0.01	-0.03
39	1.6	0.96	-0.03	-0.03	-0.096
37	1.7	1.02	-0.02	-0.02	-0.068
35	1.2	0.72	-0.00	0.00	0.00
33	1.2	0.72	0.01	0.01	0.024
31	1.5	0.90	0.00	0.00	0.00
29	1.4	0.84	-0.01	-0.01	-0.028
27	1.5	0.90	-0.01	-0.01	-0.03
25	1.3	0.78	0.01	0.01	0.026
23	1.3	0.78	0.02	0.02	0.052
21	1.3	0.78	0.01	0.01	0.026
19	1.3	0.78	0.00	0.00	0.00
17	1.3	0.78	0.02	0.02	0.052
15	1.2	0.72	-0.01	-0.01	-0.024
13	1.2	0.72	-0.02	-0.02	-0.048
$m^3/s \times 35.3 = ft^3/s$			Total Flow (Discharge)		

TCEQ-20117 (Rev. 04-22-2004)

Table 3.6. Streamflow (discharge) measurement form.

Streamflow (Discharge) Measurement Form

Stream: Colorado at Smithville Date:
Station
Description:
Time Begin: Time End: Meter Type:
Observers: Total Stream Width: Section Width (W):
Observations:

Section Midpoint (ft)	Section Depth (ft) (D)	Sensor Depth (ft)	Velocity (V)		Flow (Q) (ft^3/s) Q = (W)(D)(V)
			At Point (ft/s)	Average (ft/s)	
11	1.2	0.72	0.00	0.00	0.00
9	1.2	0.72	-0.02	-0.02	-0.048
7	1.1	0.66	-0.04	-0.04	-0.088
5	1.0	0.60	-0.01	-0.01	-0.02
3	0.8	0.48	-0.04	-0.04	-0.064
1	0.2	0.12	-0.04	-0.04	-0.016
$m^3/s \times 35.3 = ft^3/s$			Total Flow (Discharge)		-0.72

TCEQ-20117 (Rev. 04-22-2004)

TITLE RRC Billings

Project No. 219393

Book No. 0308

From Page No. ____

7/28/14

1300 TJ & J WARD onsite.
Meet TROYCE with RRC
Safety meeting - Heat stress & Biologics. HOT, clear 97°

1330 Begin open wells.
MW-9 & MW-16 no longer accessible by truck
MW-16 buried in sediment.

1830 Depart site

TJ Chandler - TRC field staff
Josh Ward - TRC field leader.
Troyce McKnight - RRC representative.

Weather hot - clear. 97°F 30% humidity

PPE - safety glasses, steel toe boots, CR gloves,

Reviewed SMT 7.28.

To Page N

Witnessed & Understood by me,	Date	Invented by:	Date 7/28/14
		Recorded by:	

Project No. 219393
Book No. 0308 TITLE RRL Ballinger

n Page No. ____

7/29/14

0945 J WARD & TJ Chandler meet Trayce of RRC On-site
Clear 85°F High 97°F 30% humidity
Safety meeting. Heat stress Biological
1000 Resume - gauging. Geotech interface probe SN 3111
1230 Calculate purge volumes
1315 Calibrate YSI 6920 + 650 MDS hand held
YSI # 06D2528AE
MYRON L Serial number 618073

YSI
pH 7.0 → 7.00
Could not calibrate. Bad pH probe

MYRON L
Cond. 1.413 → 1.413
pH. 7.00 → 7.00
4.00 → 4.00
10.00 → 10.00
Steven - Austin Pine 512-940-2965
1415 Problem Calibrating YSI
Pine called probe is bad. Shipping new one in overnight
1455 Collected MW-17.
1545 MW-15 purged dry slow recharge
1630 Collect MW-5.
Pack trucks.
1645 Depart site
1755 Ship samples

Probe decon. with Spray Alconox & distilled water
Josh Ward - TRC field leader
TJ Chandler - TRC field staff
Trayce McKnight - RRC representative.
PPE - Safety glasses, steel toe boots, CR gloves, nitrile gloves.

Reviewed 7.29.14

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date 7/29/14
		Recorded by:	

TLE RRL Ballenger

Project No. U9393

Book No. 0308

om Page No. ____ 7/29/14 Cont.

Well	DTW	DTP	TD	Notes	LVC	PV (Bail
MW-1	9.34	—	14.23		4.89	2.4
MW-2	19.62	—	49.90		30.28	14.8
MW-3	3.95	—	15.06		11.11	5.4
MW-4	11.13	—	19.82		8.69	4.3
MW-5	52.75	—	55.09		2.34	~~1.14~~ 1.1
MW-6	40.11	—	40.25		0.14	insufficient w
MW-7	22.43	—	30.02		7.89	3.9
MW-8	21.34	—	23.01	Roots	1.67	0.8
MW-9	24.76	—	31.67		6.91	3.4
MW-10	DRY @	59.75				
MW-11	DRY @	66.24				
MW-12	~~DRY @ 24.04~~		Roots	DTD - 39.55	TD - 39.92	0.37	0.2
MW-13	49.26	—	~~70.85~~ 70.05		20.79	10.2
MW-14	21.04	—	29.46	Roots	8.42	~~7.9~~ 4.2
MW-15	68.88	—	69.95		1.07	0.5
MW-16	15.07	—	17.41	Roots	2.34	1.1
MW-17	~~DRY @ 20.42~~					
	20.43	—	21.40	Roots	0.97	0.5

Reviewed 7/29/14

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date 7/29/14
		Recorded by:	

Project No. 219393
Book No. 0308 TITLE PRC Bullinger

om Page No. ____

7/30/14

0815 J WARD, TJ Chandler, Troyce on-site.
Safety meeting Heat stress biologicals.
Troyce volunteers to get new YSI from hotel front desk
Calibrate Myron L
Cond 1413 → 1413
pH. 7.0 → 7.00
4.0 → 3.95
10.0 → 9.88

0845 Try and sample MW-15 still insufficient water
0900 MW-12 purged dry
1000 MW-13 purged dry
1055 MW-16 Sampled Collected.
1145 MW-14 Collected
MW-14 - DUP-1
1205 Collect MW-8
1235 Collect MW 7
1300 Collect MW-3
MW-3 Pad cracked, vault detached, plug broken
1350 Collect MW-2 react with HNO_3
1405 Collect MW-1
1430 Collect MW-4
1500 Collect MW-9
1515 Collect MW-13 (MS/MSD) & DUP-2
1535 Collect MW-12 250 HNO_3
1545 Collect MW-15 250 HNO_3
1600 Dump Purge water & trash
1615 Depart site
1800 Ship samples.
Per Shannon collect as much of 500 ml from MW-12 & MW-15 as possible. Mark COC to call Shannon
Josh Ward - TRC field leader
TJ Chandler - TRC field staff
Troyce McKnight - PRC representative
PPE - safety glasses, steel toe, CR gloves, nitrile gloves
Hot 100°F 30% humidity.

Reviewed 7:30

To Page No. ____

Witnessed & Understood by me, | Date | Invented by: | Date 7/30/14
Recorded by:

TITLE RRC Bullinger

Project No. 249393

Book No. 0308

From Page No. ____

7/31/14

0745 S Ward, TJ Chandler, Troyce on-site
Safety Meeting Heat stress, biologics, tick safety
Cloudy 70°F High 89°F 35% humidity
Calibrate YSI - SEC TOC Form.
0800 Check MW-15 - DRY
0845 Check MW-12 - 50ml
0900 Begin river samples
1000 Collect CR-2500' Down (MS/MSD)
1040 Collect CR-1500' Down & DUP-3
1130 Collect CR-900' Down
1230 Collect CR-500' Down. Flow measured
1310 Collect CR-50' Down
1350 Collect CR-50' UP - Flow @ creek
1415 Collect CR-250' UP
1530 Collect CR-1000' UP Flow measured
1600 MW-12 DRY
1615 Collect MW-15 500ml
1625 Depart tech.
1715 Depart site.
Scott Ward. - TRC field leader
TJ Chandler - TRC field staff
Troyce McKnight - RRC representative.
PPE - safety glasses, steel toe, CR gloves, nitrile gloves.

1 drum purge water onsite
1 drum trash / PPE onsite
3 total drums on-site

Drum left near second gate.
Flow meter - Marsh-McBirney Flo-Mate model 2000 SN 2004121

Reviewed 8/1

To Page No. ____

Witnessed & Understood by me,	Date	Invented by:	Date 7/31/14
		Recorded by:	

ATTACHMENT 2

Laboratory Analytical Data Reports

August 27, 2014

Shannon Hoover
TRC Environmental Corp.
505 East Huntland Drive
Suite 250
Austin, Texas 78752
TEL: (512) 329-6080
FAX (512) 329-8750

Order No.: 1407342

RE: RRC-Ballinger

Dear Shannon Hoover:

DHL Analytical, Inc. received 2 sample(s) on 7/30/2014 for the analyses presented in the following report.

REVISION#1 This revision consists of removing Nitrite-N from the reported list of target analytes for all samples as per the client. Please replace this revised report with the original 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: T104704211-14-12

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

№ 62801

CHAIN-OF-CUSTODY

CLIENT: TRC Environmental
ADDRESS: 505 E Huntland Dr Suite 250
PHONE: 512-329-6080 FAX/E-MAIL:
DATA REPORTED TO: SHOOVER@TRCSOLUTIONS.COM
ADDITIONAL REPORT COPIES TO: JWARD@TRCSOLUTIONS.COM

DATE: 7/29/14 PAGE 1 OF 1
PO #: 71277 DHL WORK ORDER #: 1407342
PROJECT LOCATION OR NAME: RRC Ballinger
CLENT PROJECT #: 219393 COLLECTOR: J WARD

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

S=SOIL P=PAINT
W=WATER SL=SLUDGE
A=AIR O=OTHER
L=LIQUID 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 ☐ | 8081 PEST ☐ 608 PEST/PCB ☐ 8082 PCB ☐ 8270 PEST ☐ | 8270 O-P PEST ☐ 8270 PCB ☐ | 8321 HERB ☐ 8330 EXPL ☐ PERCHLORATE ☐ | METALS 6020 ☐ METALS 200.8 ☐ DISS. METALS ☐ | RCRA ☐ TX11 ☐ ☐ | PH ☐ HEX CHROM ☐ ALKALINITY X | CHLORIDE ☐ ANIONS Br, Cl, NO3, SO4 X | TCLP-SVOC ☐ VOC ☐ PEST ☐ HERB ☐ | TCLP-METALS ☐ RCRA 8 ☐ TX-11 ☐ Pb ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS X TSS ☐ % MOISTURE ☐ CYANIDE ☐ | Carbon Cr, Mg, K, Na

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	FIELD NOTES
MW-17	01	7/29/14	1455	Water	500 & 250 Poly	2		X		X	X	
MW-5	02	7/29/14	1630	Water	"	2		X		X	X	

TOTAL

RELINQUISHED BY: (Signature) DATE/TIME 7/29/14 1745 RECEIVED BY: (Signature) Fedex
RELINQUISHED BY: (Signature) Fedex DATE/TIME 7/30/14 900 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 X
OTHER ☐ _____

LABORATORY USE ONLY:
RECEIVING TEMP: 2.3 THERM #: 57
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☐ NOT USED
CARRIER BILL #: Fedex
☐ APC DELIVERY
☐ HAND DELIVERED

ORIGIN ID:SJTA (512) 565-0366
JOSH WARD PRODUCT #219393
TRC ENVIRONMENTAL
505 E HUNTLAND DR
SUITE 250
AUSTIN, TX 78752
UNITED STATES US

SHIP DATE: 29JUL14
ACTWGT: 56.5 LB
CAD: 6992517/SSF01501
DIMS: 26x14x14 IN

BILL THIRD PARTY

TO **DHL RECEIVING**
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

E

REL# 3785346

WED - 30 JUL AA
STANDARD OVERNIGHT

TRK# 0201 **7800 7140 4749**

44 BSMA

AHS
78664
TX-US **AUS**

CUSTODY SEAL
DATE 7/29/14
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name TRC Environmental Corp. Date Received: 7/30/2014

Work Order Number 1407342 Received by JB

Checklist completed by: _____ 7/30/2014 Reviewed by DZ 7/30/2014

Signature | Date | Initials | Date

Carrier name FedEx 1day

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	2.3 °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 CS
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 _____

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: RRC - Ballinger	**Date:** 8/12/14
Reviewer Name: Carlos Castro	**Laboratory Work Order:** 1407342
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
		Chain-of-Custody (C-O-C)					
R1	OI	**1)** Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MQL?	**X**				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: RRC - Ballinger | **Date:** 8/12/14

Reviewer Name: Carlos Castro | **Laboratory Work Order:** 1407342

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 6-10, 2013. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director

Signature

08/27/14

Date

DHL Analytical, Inc. **Date:** *12-Aug-14*

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1407342

CASE NARRATIVE

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

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 7/30/14. A total of 2 samples were received. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions analysis performed on 7/30/14 the matrix spike and matrix spike duplicate recoveries were below control limits for Chloride and/or Nitrate-N. These are flagged accordingly in the QC summary report. The 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.

For Metals analysis performed on 8/8/14 the matrix spike and matrix spike duplicate recoveries were out of control limits for three analytes. These are flagged accordingly. The 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.

Exception Report R10-01

For Anions analysis all samples were diluted prior to analysis due to the nature of the samples (concentration of Chloride).

Exception Report S2-02

For Metals analysis performed on 8/8/14 the LCVLs (LCVL1-140808 & LCVL2-140808) were above control limits for Calcium. These are flagged accordingly in the QC summary report. The associated CCVs (CCV1-140808 & CCV2-140808) were within control limits for this analyte. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *12-Aug-14*

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1407342

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1407342-01	MW-17		07/29/14 02:55 PM	7/30/2014
1407342-02	MW-5		07/29/14 04:30 PM	7/30/2014

Lab Order: 1407342
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1407342-01A	MW-17	07/29/14 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-17	07/29/14 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-17	07/29/14 02:55 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407342-01B	MW-17	07/29/14 02:55 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-17	07/29/14 02:55 PM	Aqueous	E300	Anion Preparation	07/30/14 08:43 AM	64936
	MW-17	07/29/14 02:55 PM	Aqueous	E300	Anion Preparation	07/30/14 08:43 AM	64936
	MW-17	07/29/14 02:55 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:28 AM	65038
1407342-02A	MW-5	07/29/14 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-5	07/29/14 04:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407342-02B	MW-5	07/29/14 04:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-5	07/29/14 04:30 PM	Aqueous	E300	Anion Preparation	07/30/14 08:43 AM	64936
	MW-5	07/29/14 04:30 PM	Aqueous	E300	Anion Preparation	07/30/14 08:43 AM	64936
	MW-5	07/29/14 04:30 PM	Aqueous	E300	Anion Preparation	07/30/14 08:43 AM	64936
	MW-5	07/29/14 04:30 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:28 AM	65038

Lab Order: 1407342
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1407342-01A	MW-17	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/11/14 01:54 PM	ICP-MS4_140811C
	MW-17	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	10	08/08/14 12:35 PM	ICP-MS4_140808B
	MW-17	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	100	08/08/14 12:31 PM	ICP-MS4_140808B
1407342-01B	MW-17	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 01:08 PM	TITRATOR_140801B
	MW-17	Aqueous	E300	Anions by IC method - Water	64936	100	07/30/14 12:08 PM	IC_140730A
	MW-17	Aqueous	E300	Anions by IC method - Water	64936	1	07/30/14 11:20 AM	IC_140730A
	MW-17	Aqueous	M2540C	Total Dissolved Solids	65038	1	08/05/14 09:15 PM	WC_140805B
1407342-02A	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	100	08/08/14 12:36 PM	ICP-MS4_140808B
	MW-5	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	1000	08/08/14 12:33 PM	ICP-MS4_140808B
1407342-02B	MW-5	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 01:16 PM	TITRATOR_140801B
	MW-5	Aqueous	E300	Anions by IC method - Water	64936	10	07/30/14 02:15 PM	IC_140730A
	MW-5	Aqueous	E300	Anions by IC method - Water	64936	1000	07/30/14 12:23 PM	IC_140730A
	MW-5	Aqueous	E300	Anions by IC method - Water	64936	1	07/30/14 11:34 AM	IC_140730A
	MW-5	Aqueous	M2540C	Total Dissolved Solids	65038	1	08/05/14 09:15 PM	WC_140805B

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-17
Project:	RRC-Ballinger	**Lab ID:**	1407342-01
Project No:	219393	**Collection Date:**	07/29/14 02:55 PM
Lab Order:	1407342	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	1100	50.0	150		mg/L	500	08/11/14 01:54 PM
Magnesium	360	10.0	30.0		mg/L	100	08/08/14 12:31 PM
Potassium	9.52	1.00	3.00		mg/L	10	08/08/14 12:35 PM
Sodium	675	10.0	30.0		mg/L	100	08/08/14 12:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	6.43	0.300	1.00		mg/L	1	07/30/14 11:20 AM
Chloride	1510	30.0	100		mg/L	100	07/30/14 12:08 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	07/30/14 11:20 AM
Sulfate	2370	100	300		mg/L	100	07/30/14 12:08 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	437	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:08 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:08 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:08 PM
Alkalinity, Total (As CaCO3)	437	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:08 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	4530	50.0	50.0		mg/L	1	08/05/14 09:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-5
Project:	RRC-Ballinger	**Lab ID:**	1407342-02
Project No:	219393	**Collection Date:**	07/29/14 04:30 PM
Lab Order:	1407342	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2480	100	300		mg/L	1000	08/08/14 12:33 PM
Magnesium	1230	100	300		mg/L	1000	08/08/14 12:33 PM
Potassium	70.1	10.0	30.0		mg/L	100	08/08/14 12:36 PM
Sodium	10500	100	300		mg/L	1000	08/08/14 12:33 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	79.2	3.00	10.0		mg/L	10	07/30/14 02:15 PM
Chloride	20200	300	1000		mg/L	1000	07/30/14 12:23 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/30/14 02:15 PM
Sulfate	1150	10.0	30.0		mg/L	10	07/30/14 02:15 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	264	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:16 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:16 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:16 PM
Alkalinity, Total (As CaCO3)	264	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 01:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	52200	1000	1000		mg/L	1	08/05/14 09:15 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

The QC data in batch 65007 applies to the following samples: 1407342-01A, 1407342-02A

Sample ID **1407367-11A PDS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:25:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	614	15.0	250	357	103	80	120			
Magnesium	544	15.0	250	279	106	80	120			
Sodium	1120	15.0	250	856	106	80	120			

Sample ID **1407367-11A MS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:27:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	350	15.0	5.00	357	-146	80	120			S
Magnesium	275	15.0	5.00	279	-96.4	80	120			S
Sodium	829	15.0	5.00	856	-528	80	120			S

Sample ID **1407367-11A MSD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:29:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	357	15.0	5.00	357	1.82	80	120	2.10	15	S
Magnesium	283	15.0	5.00	279	75.2	80	120	3.08	15	S
Sodium	843	15.0	5.00	856	-248	80	120	1.67	15	S

Sample ID **1407367-11A SD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:30:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	10.2	7.50	0	9.40				7.75	10	

Sample ID **1407367-11A SD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:48:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	365	75.0	0	357				2.31	10	
Magnesium	276	75.0	0	279				1.12	10	
Sodium	858	75.0	0	856				0.330	10	

Sample ID **1407367-11A PDS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:50:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	37.8	1.50	25.0	9.40	113	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID	**1407367-11A MS**	Batch ID:	**65007**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_140808B**	Analysis Date:	**8/8/2014 1:51:00 PM**	Prep Date:	**8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	14.1	1.50	5.00	9.40	93.3	80	120			

Sample ID	**1407367-11A MSD**	Batch ID:	**65007**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_140808B**	Analysis Date:	**8/8/2014 1:53:00 PM**	Prep Date:	**8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	15.0	1.50	5.00	9.40	113	80	120	6.77	15	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID **ICV-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 11:15:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.49	0.300	2.50	0	99.8	90	110			
Magnesium	2.69	0.300	2.50	0	107	90	110			
Potassium	2.54	0.300	2.50	0	102	90	110			
Sodium	2.72	0.300	2.50	0	109	90	110			

Sample ID **LCVL-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 11:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.130	0.300	0.100	0	130	70	130			
Magnesium	0.0986	0.300	0.100	0	98.6	70	130			
Potassium	0.0983	0.300	0.100	0	98.3	70	130			
Sodium	0.0983	0.300	0.100	0	98.3	70	130			

Sample ID **CCV1-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 1:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.3	90	110			
Magnesium	4.98	0.300	5.00	0	99.6	90	110			
Potassium	5.19	0.300	5.00	0	104	90	110			
Sodium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL1-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 1:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.153	0.300	0.100	0	153	70	130			S
Magnesium	0.105	0.300	0.100	0	105	70	130			
Potassium	0.116	0.300	0.100	0	116	70	130			
Sodium	0.116	0.300	0.100	0	116	70	130			

Sample ID **CCV2-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 2:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.31	0.300	5.00	0	106	90	110			
Magnesium	5.22	0.300	5.00	0	104	90	110			
Potassium	5.51	0.300	5.00	0	110	90	110			
Sodium	5.20	0.300	5.00	0	104	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID **LCVL2-140808** Batch ID: **R74813** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 2:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.152	0.300	0.100	0	152	70	130			S
Magnesium	0.104	0.300	0.100	0	104	70	130			
Potassium	0.117	0.300	0.100	0	117	70	130			
Sodium	0.120	0.300	0.100	0	120	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

Sample ID	**ICV2-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 1:09:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.68	0.300	2.50	0	107	90	110			

Sample ID	**ILCVL2-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 1:17:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0918	0.300	0.100	0	91.8	70	130			

Sample ID	**CCV6-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 2:24:00 PM**	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			

Sample ID	**LCVL6-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 2:29:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140730A

The QC data in batch 64936 applies to the following samples: 1407342-01B, 1407342-02B

Sample ID	**MB-64936**	Batch ID:	**64936**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC_140730A**	Analysis Date:	**7/30/2014 9:09:51 AM**	Prep Date:	**7/30/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-64936**	Batch ID:	**64936**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC_140730A**	Analysis Date:	**7/30/2014 9:24:27 AM**	Prep Date:	**7/30/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.9	1.00	20.00	0	94.4	90	110			
Chloride	9.51	1.00	10.00	0	95.1	90	110			
Nitrate-N	4.78	0.500	5.000	0	95.7	90	110			
Sulfate	28.3	3.00	30.00	0	94.2	90	110			

Sample ID	**LCSD-64936**	Batch ID:	**64936**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC_140730A**	Analysis Date:	**7/30/2014 9:39:04 AM**	Prep Date:	**7/30/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.8	1.00	20.00	0	93.8	90	110	0.581	20	
Chloride	9.46	1.00	10.00	0	94.6	90	110	0.609	20	
Nitrate-N	4.79	0.500	5.000	0	95.7	90	110	0.033	20	
Sulfate	28.2	3.00	30.00	0	94.1	90	110	0.168	20	

Sample ID	**1407315-13CMS**	Batch ID:	**64936**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC_140730A**	Analysis Date:	**7/30/2014 4:14:40 PM**	Prep Date:	**7/30/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18000	1000	20000	0	89.9	90	110			
Chloride	34800	1000	20000	22940	59.2	90	110			S
Nitrate-N	4010	500	4516	0	88.8	90	110			S
Sulfate	20900	3000	20000	2438	92.1	90	110			

Sample ID	**1407315-13CMSD**	Batch ID:	**64936**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC_140730A**	Analysis Date:	**7/30/2014 4:29:17 PM**	Prep Date:	**7/30/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18200	1000	20000	0	91.1	90	110	1.40	20	
Chloride	35100	1000	20000	22940	60.9	90	110	0.981	20	S
Nitrate-N	4080	500	4516	0	90.4	90	110	1.79	20	
Sulfate	20900	3000	20000	2438	92.4	90	110	0.298	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140730A

Sample ID **ICV-140730**	Batch ID: **R74608**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC_140730A**	Analysis Date: **7/30/2014 8:53:32 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	47.5	1.00	50.00	0	95.0	90	110			
Chloride	24.0	1.00	25.00	0	96.1	90	110			
Nitrate-N	12.1	0.500	12.50	0	96.9	90	110			
Sulfate	71.0	3.00	75.00	0	94.7	90	110			

Sample ID **CCV1-140730**	Batch ID: **R74608**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC_140730A**	Analysis Date: **7/30/2014 12:37:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	19.0	1.00	20.00	0	94.9	90	110			
Chloride	9.59	1.00	10.00	0	95.9	90	110			
Nitrate-N	4.81	0.500	5.000	0	96.3	90	110			
Sulfate	28.7	3.00	30.00	0	95.7	90	110			

Sample ID **CCV2-140730**	Batch ID: **R74608**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC_140730A**	Analysis Date: **7/30/2014 4:43:53 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	19.4	1.00	20.00	0	97.1	90	110			
Chloride	9.79	1.00	10.00	0	97.9	90	110			
Nitrate-N	4.94	0.500	5.000	0	98.8	90	110			
Sulfate	29.3	3.00	30.00	0	97.6	90	110			

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

The QC data in batch 64991 applies to the following samples: 1407342-01B, 1407342-02B

Sample ID	**MB-64991**	Batch ID:	**64991**	TestNo:	**M2320 B**	Units:	**mg/L @ pH 4.46**
SampType:	**MBLK**	Run ID:	**TITRATOR_140801B**	Analysis Date:	**8/1/2014 12:19:00 PM**	Prep Date:	**8/1/2014**

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

Sample ID	**LCS-64991**	Batch ID:	**64991**	TestNo:	**M2320 B**	Units:	**mg/L @ pH 4.2**
SampType:	**LCS**	Run ID:	**TITRATOR_140801B**	Analysis Date:	**8/1/2014 12:23:00 PM**	Prep Date:	**8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.2	20.0	50.00	0	108	74	129			

Sample ID	**1408007-05B DUP**	Batch ID:	**64991**	TestNo:	**M2320 B**	Units:	**mg/L @ pH 4.49**
SampType:	**DUP**	Run ID:	**TITRATOR_140801B**	Analysis Date:	**8/1/2014 12:59:00 PM**	Prep Date:	**8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	283	20.0	0	273.0				3.46	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	283	20.0	0	273.0				3.46	20	

Sample ID	**1407367-07B DUP**	Batch ID:	**64991**	TestNo:	**M2320 B**	Units:	**mg/L @ pH 4.51**
SampType:	**DUP**	Run ID:	**TITRATOR_140801B**	Analysis Date:	**8/1/2014 3:16:00 PM**	Prep Date:	**8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	221	20.0	0	222.7				0.812	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	221	20.0	0	222.7				0.812	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: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

Sample ID **ICV-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.19**
SampType: **ICV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 12:17:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	91.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID **CCV1-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 1:30:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	16.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	83.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.2	20.0	100.0	0	99.2	90	110			

Sample ID **CCV2-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 2:55:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	79.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.2	20.0	100.0	0	99.2	90	110			

Sample ID **CCV3-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 4:25:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.7	20.0	100.0	0	98.7	90	110			

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140805B

The QC data in batch 65038 applies to the following samples: 1407342-01B, 1407342-02B

Sample ID **MB-65038**	Batch ID: **65038**	TestNo: **M2540C**	Units: **mg/L**
SampType: **MBLK**	Run ID: **WC_140805B**	Analysis Date: **8/5/2014 9:15:00 PM**	Prep Date: **8/5/2014**

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

Sample ID **LCS-65038**	Batch ID: **65038**	TestNo: **M2540C**	Units: **mg/L**
SampType: **LCS**	Run ID: **WC_140805B**	Analysis Date: **8/5/2014 9:15:00 PM**	Prep Date: **8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	743	10.0	745.6	0	99.7	90	113			

Sample ID **1407342-01B-DUP**	Batch ID: **65038**	TestNo: **M2540C**	Units: **mg/L**
SampType: **DUP**	Run ID: **WC_140805B**	Analysis Date: **8/5/2014 9:15:00 PM**	Prep Date: **8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4540	50.0	0	4525				0.221	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

CLIENT: TRC Environmental Corp.
Work Order: 1407342
Project: RRC-Ballinger

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Bromide	0.300	1.00
Chloride	0.300	1.00
Nitrate-N	0.100	0.500
Nitrite-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: M2320 B	**MDL**	**MQL**
Analyte	**g/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: SW6020A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Calcium	0.100	0.300
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

August 27, 2014

Shannon Hoover
TRC Environmental Corp.
505 East Huntland Drive
Suite 250
Austin, Texas 78752
TEL: (512) 329-6080
FAX (512) 329-8750

Order No.: 1407367

RE: RRC-Ballinger

Dear Shannon Hoover:

DHL Analytical, Inc. received 14 sample(s) on 7/31/2014 for the analyses presented in the following report.

REVISION#1 This revision consists of removing Nitrite-N from the reported list of target analytes for all samples as per the client. Please replace this revised report with the original 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: T104704211-14-12

Table of Contents

DHL ANALYTICAL

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№ 62800

CHAIN-OF-CUSTODY

CLIENT: TRC Environmental
ADDRESS: 505 E Huntland Dr Suite 250
PHONE: 512-329-6080 FAX/E-MAIL:
DATA REPORTED TO: shoover@trcsolutions.com
ADDITIONAL REPORT COPIES TO: jward@trcsolutions.com

DATE: 7/30/14 PAGE 1 OF 1
PO #: 79277 DHL WORK ORDER #: 1407367
PROJECT LOCATION OR NAME: RRC Bellinger
CLENT PROJECT #: 219393 COLLECTOR: J Ward

Authorize 5% surcharge for TRRP Report? ❑ Yes ❑ No

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

ANALYSES:
1. BTEX ❑ MTBE ❑ [METHOD 8021]
2. TPH 1005 ❑ TPH 1006 ❑ HOLD 1006 ❑
3. GRO [METHOD 8015] ❑ DRO [METHOD 8105] ❑
4. VOC 8260 ❑ VOC 624 ❑ VOC 8260/5035 ❑
5. SVOC 8270 ❑ PAH 8270 ❑ HOLD PAH ❑ SVOC 625 ❑
6. 8081 PEST ❑ 608 PEST/PCB ❑ 8270 PEST ❑
7. 8270 O-P PEST ❑ 8082 PCB ❑ 8270 PCB ❑
8. 8321 HERB ❑ 8330 EXPL ❑ PERCHLORATE ❑
9. METALS 6020 ❑ METALS 200.8 ❑ DISS. METALS ❑
10. RCRA ❑ TX11 ❑ ____ ❑
11. PH ❑ HEX CHROM ❑ ALKALINITY X
12. CHLORIDE ANIONS X See right
13. TCLP-SVOC ❑ VOC ❑ PEST ❑ HERB ❑
14. TCLP-METALS ❑ RCRA 8 ❑ TX-11 ❑ Pb ❑
15. RCI ❑ TOX ❑ FLASHPOINT ❑ CYANIDE ❑
16. TDS X TSS ❑ % MOISTURE ❑
17. Br Cl Nitrate Nitrite SO4
18. Cations Ca, Mg, K, Na
19. (blank)

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ❑ NaOH ❑	ICE	UNPRESERVED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	FIELD NOTES
MW-16	01	7/30/14	1055	WATER	500 & 250 Poly	2		X		X	X											X	X				X	X	X		
MW-14	02	↓	1145	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
DUP-1	03	↓	—	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-8	04	↓	1205	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-7	05	↓	1235	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-3	06	↓	1300	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-2	07	↓	1350	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-1	08	↓	1405	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-4	09	↓	1430	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-9	10	↓	1500	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-13	11	↓	1515	↓	↓	6		↓		↓	↓											↓	↓				↓	↓	↓		Run MS/MSD
DUP-2	12	↓	—	↓	↓	2		↓		↓	↓											↓	↓				↓	↓	↓		
MW-12	13	↓	1535	↓	↓	~~2~~ 1		↓		↓																			X		
MW-15	14	↓	1545	↓	↓	~~2~~ 1		↓		↓																			X		
TOTAL																															

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	7/30/14 1720	FedEx
FedEX	7/31/14 09:00	Marie Dupont

❑ *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: 2.7/0.7 THERM #: 57
CUSTODY SEALS: ❑ BROKEN ☑ INTACT ❑ NOT USED
☑ CARRIER BILL #: FedEx
❑ APC DELIVERY
❑ HAND DELIVERED

ORIGIN ID:SJTA (512) 565-0366
JOSH WARD
TRC ENVIRONMENTAL
505 EAST HUNTLAND DR
SUITE 250
AUSTIN, TX 78752
UNITED STATES US

SHIP DATE: 30JUL14
ACTWGT: 53.3 LB
CAD: 6992517/SSFO1501
DIMS: 26x14x14 IN
BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664
(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx
Express
E
J142014061901uv
REL#
3785346

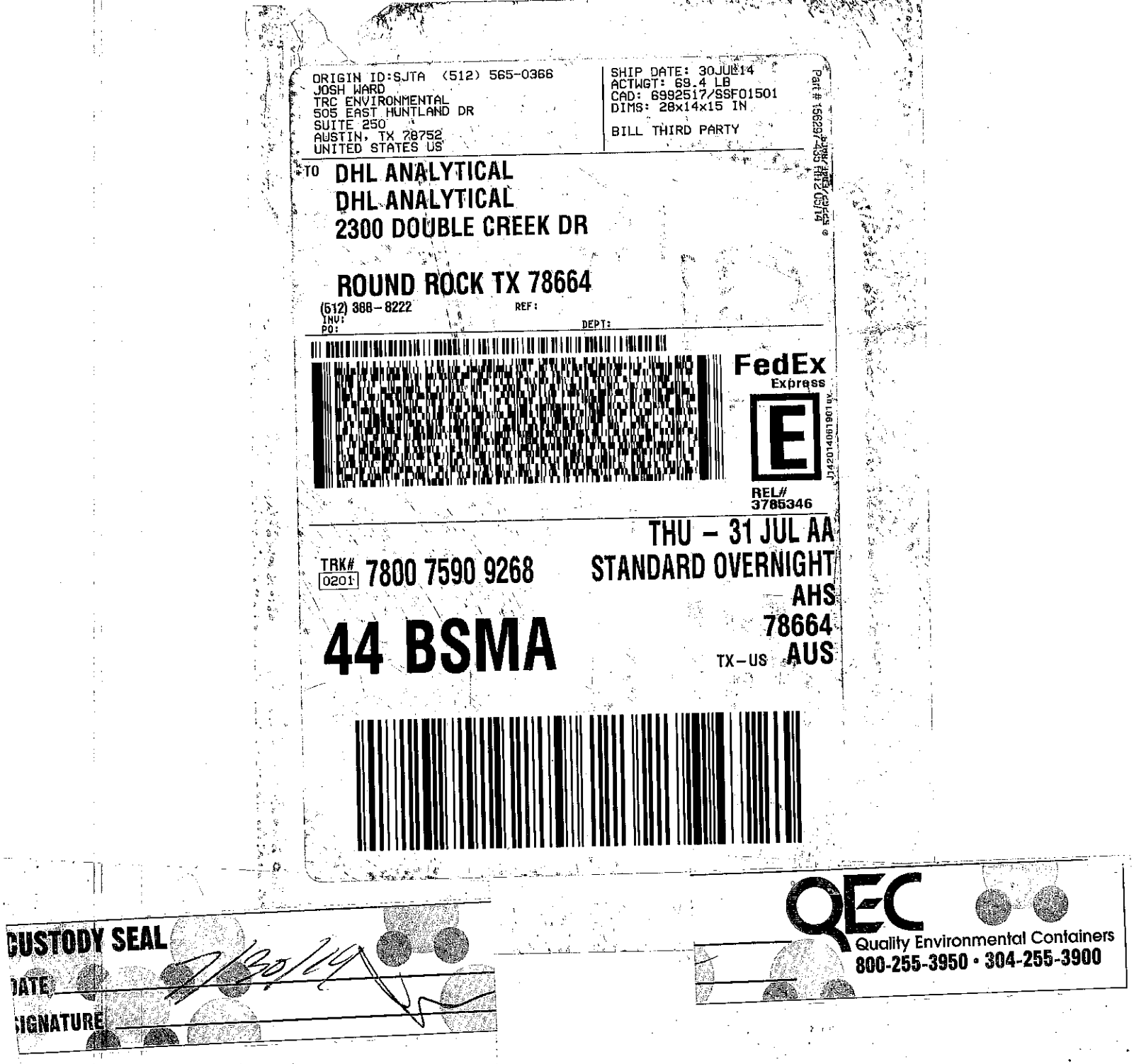
THU - 31 JUL AA
STANDARD OVERNIGHT
AHS
78664
TX-US AUS

TRK# 0201 7800 7589 8094

44 BSMA

CUSTODY SEAL
DATE 7/30/14
SIGNATURE

QEC Quality Environmental Containers
800-255-3950 · 304-255-3900



ORIGIN ID:SJTA (512) 565-0366
JOSH WARD
TRC ENVIRONMENTAL
505 EAST HUNTLAND DR
SUITE 250
AUSTIN, TX 78752
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SHIP DATE: 30JUL14
ACTWGT: 69.4 LB
CAD: 6992517/SSFO1501
DIMS: 28x14x15 IN

BILL THIRD PARTY

TO DHL ANALYTICAL
DHL ANALYTICAL
2300 DOUBLE CREEK DR

ROUND ROCK TX 78664

(512) 388-8222 REF:
INV:
PO: DEPT:

FedEx Express

REL# 3786346

TRK# 0201 7800 7590 9268

THU - 31 JUL AA
STANDARD OVERNIGHT
AHS
78664
TX-US AUS

44 BSMA

CUSTODY SEAL
DATE 7/30/14
SIGNATURE

QEC
Quality Environmental Containers
800-255-3950 • 304-255-3900

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name TRC Environmental Corp. Date Received: 7/31/2014

Work Order Number 1407367 Received by MD

Checklist completed by: Signature 7/31/2014 Date Reviewed by DL Initials 7/31/2014 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 ☐	2.7 °C 2.7
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 CS
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.
Laboratory Review Checklist: Reportable Data

Project Name: RRC-Ballinger	**Date:** 8/15/2014
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1407367
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-Custody (C-O-C)**					
		1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	**X**				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			**X**		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	**X**				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	**X**				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	**X**				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	**X**				
		3) Were calculations checked by a peer or supervisor?	**X**				
		4) Were all analyte identifications checked by a peer or supervisor?	**X**				
		5) Were sample detection limits reported for all analytes not detected?	**X**				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			**X**		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			**X**		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			**X**		
		9) If required for the project, TICs reported?			**X**		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			**X**		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			**X**		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	**X**				
		2) Were blanks analyzed at the appropriate frequency?	**X**				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	**X**				
		4) Were blank concentrations < MQL?	**X**				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	**X**				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	**X**				
		3) Were LCSs analyzed at the required frequency?	**X**				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	**X**				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	**X**				
		6) Was the LCSD RPD within QC limits (if applicable)?	**X**				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	**X**				
		2) Were MS/MSD analyzed at the appropriate frequency?	**X**				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		**X**			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	**X**				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	**X**				
		2) Were analytical duplicates analyzed at the appropriate frequency?	**X**				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	**X**				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	**X**				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	**X**				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	**X**				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	**X**				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	**X**				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: RRC-Ballinger | **Date:** 8/15/2014

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1407367

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?	**X**				
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	**X**				
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 6-10, 2013. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director

Signature

08/27/14

Date

DHL Analytical, Inc. **Date:** *27-Aug-14*

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1407367

CASE NARRATIVE

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

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 7/31/2014. A total of 14 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions Analysis, for batch 64971 the recovery of Nitrate-N for the Matrix Spike and Matrix Spike Duplicate (1407358-06 MS/MSD) was outside of the method control limits. These are flagged accordingly in the QC Summary Report. This anion was within method control limits in the associated LCS. No further corrective action was taken.

For Metals Analysis, the recoveries of three analytes for the Matrix Spike and Matrix Spike Duplicate (1407367-11 MS/MSD) were below the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were within method control limits in the associated LCS. The reference sample selected for the QC Sample was from this workorder. No further corrective action was taken.

Exception Report R10-01

For Anions analysis the samples were diluted due to the nature of the samples.

Exception Report S2-02

For Metals Analysis, performed on 8/8/2014 and 8/11/2014, the recoveries of Calcium/Sodium for various LCVLs were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These analytes were detected in the associated samples at greater than 10x the amount detected in the LCVLs. No further corrective actions were taken.

DHL Analytical, Inc.

Date: *15-Aug-14*

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1407367

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1407367-01	MW-16		07/30/14 10:55 AM	7/31/2014
1407367-02	MW-14		07/30/14 11:45 AM	7/31/2014
1407367-03	DUP-1		07/30/14	7/31/2014
1407367-04	MW-8		07/30/14 12:05 PM	7/31/2014
1407367-05	MW-7		07/30/14 12:35 PM	7/31/2014
1407367-06	MW-3		07/30/14 01:00 PM	7/31/2014
1407367-07	MW-2		07/30/14 01:50 PM	7/31/2014
1407367-08	MW-1		07/30/14 02:05 PM	7/31/2014
1407367-09	MW-4		07/30/14 02:30 PM	7/31/2014
1407367-10	MW-9		07/30/14 03:00 PM	7/31/2014
1407367-11	MW-13		07/30/14 03:15 PM	7/31/2014
1407367-12	DUP-2		07/30/14	7/31/2014
1407367-13	MW-12		07/30/14 03:35 PM	7/31/2014
1407367-14	MW-15		07/30/14 03:45 PM	7/31/2014

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1407367-01A	MW-16	07/30/14 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-16	07/30/14 10:55 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-01B	MW-16	07/30/14 10:55 AM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-16	07/30/14 10:55 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-16	07/30/14 10:55 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-16	07/30/14 10:55 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-16	07/30/14 10:55 AM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-02A	MW-14	07/30/14 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-14	07/30/14 11:45 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-02B	MW-14	07/30/14 11:45 AM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-14	07/30/14 11:45 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-14	07/30/14 11:45 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-14	07/30/14 11:45 AM	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	MW-14	07/30/14 11:45 AM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-03A	DUP-1	07/30/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	DUP-1	07/30/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-03B	DUP-1	07/30/14	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	DUP-1	07/30/14	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	DUP-1	07/30/14	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	DUP-1	07/30/14	Aqueous	E300	Anion Preparation	07/31/14 10:06 AM	64971
	DUP-1	07/30/14	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-04A	MW-8	07/30/14 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-8	07/30/14 12:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-04B	MW-8	07/30/14 12:05 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-8	07/30/14 12:05 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-8	07/30/14 12:05 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-8	07/30/14 12:05 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-8	07/30/14 12:05 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1407367-05A	MW-7	07/30/14 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-7	07/30/14 12:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-05B	MW-7	07/30/14 12:35 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-7	07/30/14 12:35 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-7	07/30/14 12:35 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-7	07/30/14 12:35 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-7	07/30/14 12:35 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-06A	MW-3	07/30/14 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-3	07/30/14 01:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-06B	MW-3	07/30/14 01:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-3	07/30/14 01:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-3	07/30/14 01:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-3	07/30/14 01:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-3	07/30/14 01:00 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-07A	MW-2	07/30/14 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-2	07/30/14 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-07B	MW-2	07/30/14 01:50 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:28 AM	64991
	MW-2	07/30/14 01:50 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-2	07/30/14 01:50 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-2	07/30/14 01:50 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-2	07/30/14 01:50 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-08A	MW-1	07/30/14 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-1	07/30/14 02:05 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-08B	MW-1	07/30/14 02:05 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	MW-1	07/30/14 02:05 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-1	07/30/14 02:05 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-1	07/30/14 02:05 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-09A	MW-4	07/30/14 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1407367-09A	MW-4	07/30/14 02:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-09B	MW-4	07/30/14 02:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	MW-4	07/30/14 02:30 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-4	07/30/14 02:30 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-4	07/30/14 02:30 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-10A	MW-9	07/30/14 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-9	07/30/14 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-9	07/30/14 03:00 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-10B	MW-9	07/30/14 03:00 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	MW-9	07/30/14 03:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-9	07/30/14 03:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-9	07/30/14 03:00 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-9	07/30/14 03:00 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-11A	MW-13	07/30/14 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-13	07/30/14 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-13	07/30/14 03:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-11B	MW-13	07/30/14 03:15 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	MW-13	07/30/14 03:15 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-13	07/30/14 03:15 PM	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	MW-13	07/30/14 03:15 PM	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-12A	DUP-2	07/30/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	DUP-2	07/30/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
1407367-12B	DUP-2	07/30/14	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	DUP-2	07/30/14	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	DUP-2	07/30/14	Aqueous	E300	Anion Preparation	07/31/14 02:10 PM	64978
	DUP-2	07/30/14	Aqueous	M2540C	TDS Preparation	08/05/14 10:04 PM	65075
1407367-13A	MW-12	07/30/14 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-12	07/30/14 03:35 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1407367-14A	MW-15	07/30/14 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007
	MW-15	07/30/14 03:45 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/04/14 09:17 AM	65007

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1407367-01A	MW-16	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 02:28 PM	ICP-MS4_140814B
	MW-16	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/11/14 01:56 PM	ICP-MS4_140811C
1407367-01B	MW-16	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:01 PM	TITRATOR_140801B
	MW-16	Aqueous	E300	Anions by IC method - Water	64971	10	07/31/14 02:48 PM	IC_140731B
	MW-16	Aqueous	E300	Anions by IC method - Water	64971	100	07/31/14 03:35 PM	IC_140731B
	MW-16	Aqueous	E300	Anions by IC method - Water	64971	1000	07/31/14 04:21 PM	IC_140731B
	MW-16	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-02A	MW-14	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5	08/14/14 03:47 PM	ICP-MS4_140814B
	MW-14	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 04:46 PM	ICP-MS4_140814B
1407367-02B	MW-14	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:13 PM	TITRATOR_140801B
	MW-14	Aqueous	E300	Anions by IC method - Water	64971	1000	07/31/14 04:35 PM	IC_140731B
	MW-14	Aqueous	E300	Anions by IC method - Water	64971	10	07/31/14 03:02 PM	IC_140731B
	MW-14	Aqueous	E300	Anions by IC method - Water	64971	100	07/31/14 03:49 PM	IC_140731B
	MW-14	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-03A	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5	08/14/14 03:49 PM	ICP-MS4_140814B
	DUP-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 04:48 PM	ICP-MS4_140814B
1407367-03B	DUP-1	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:25 PM	TITRATOR_140801B
	DUP-1	Aqueous	E300	Anions by IC method - Water	64971	10	07/31/14 03:17 PM	IC_140731B
	DUP-1	Aqueous	E300	Anions by IC method - Water	64971	100	07/31/14 04:04 PM	IC_140731B
	DUP-1	Aqueous	E300	Anions by IC method - Water	64971	1000	07/31/14 04:50 PM	IC_140731B
	DUP-1	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-04A	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 02:30 PM	ICP-MS4_140814B
	MW-8	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/11/14 01:58 PM	ICP-MS4_140811C
1407367-04B	MW-8	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:35 PM	TITRATOR_140801B
	MW-8	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 03:47 PM	IC2_140731B
	MW-8	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 07:12 PM	IC2_140731B
	MW-8	Aqueous	E300	Anions by IC method - Water	64978	1000	07/31/14 10:22 PM	IC2_140731B
	MW-8	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1407367-05A	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/11/14 02:00 PM	ICP-MS4_140811C
	MW-7	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 02:31 PM	ICP-MS4_140814B
1407367-05B	MW-7	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:45 PM	TITRATOR_140801B
	MW-7	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 04:01 PM	IC2_140731B
	MW-7	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 07:27 PM	IC2_140731B
	MW-7	Aqueous	E300	Anions by IC method - Water	64978	1000	07/31/14 10:36 PM	IC2_140731B
	MW-7	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-06A	MW-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/11/14 02:01 PM	ICP-MS4_140811C
	MW-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5000	08/14/14 02:35 PM	ICP-MS4_140814B
1407367-06B	MW-3	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 02:50 PM	TITRATOR_140801B
	MW-3	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 04:16 PM	IC2_140731B
	MW-3	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 07:41 PM	IC2_140731B
	MW-3	Aqueous	E300	Anions by IC method - Water	64978	1000	07/31/14 10:51 PM	IC2_140731B
	MW-3	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-07A	MW-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/14/14 02:20 PM	ICP-MS4_140814B
	MW-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/11/14 02:03 PM	ICP-MS4_140811C
1407367-07B	MW-2	Aqueous	M2320 B	Alkalinity	64991	1	08/01/14 03:11 PM	TITRATOR_140801B
	MW-2	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 04:30 PM	IC2_140731B
	MW-2	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 07:56 PM	IC2_140731B
	MW-2	Aqueous	E300	Anions by IC method - Water	64978	1000	07/31/14 11:06 PM	IC2_140731B
	MW-2	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-08A	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	100	08/11/14 02:05 PM	ICP-MS4_140811C
	MW-1	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	100	08/14/14 02:26 PM	ICP-MS4_140814B
1407367-08B	MW-1	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 03:39 PM	TITRATOR_140801B
	MW-1	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 05:01 PM	IC2_140731B
	MW-1	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 08:11 PM	IC2_140731B
	MW-1	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-09A	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/11/14 02:07 PM	ICP-MS4_140811C

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1407367-09A	MW-4	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	10	08/14/14 02:18 PM	ICP-MS4_140814B
1407367-09B	MW-4	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 03:48 PM	TITRATOR_140801B
	MW-4	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 05:16 PM	IC2_140731B
	MW-4	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 08:25 PM	IC2_140731B
	MW-4	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-10A	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/14/14 03:40 PM	ICP-MS4_140814B
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/11/14 02:09 PM	ICP-MS4_140811C
	MW-9	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 02:33 PM	ICP-MS4_140814B
1407367-10B	MW-9	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 03:56 PM	TITRATOR_140801B
	MW-9	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 05:30 PM	IC2_140731B
	MW-9	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 08:40 PM	IC2_140731B
	MW-9	Aqueous	E300	Anions by IC method - Water	64978	1000	07/31/14 11:49 PM	IC2_140731B
	MW-9	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-11A	MW-13	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/08/14 12:21 PM	ICP-MS4_140808B
	MW-13	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5	08/08/14 01:28 PM	ICP-MS4_140808B
	MW-13	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5	08/08/14 05:27 PM	ICP-MS4_140808D
1407367-11B	MW-13	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:01 PM	TITRATOR_140801B
	MW-13	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 08:54 PM	IC2_140731B
	MW-13	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 05:45 PM	IC2_140731B
	MW-13	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-12A	DUP-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/14/14 04:50 PM	ICP-MS4_140814B
	DUP-2	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	5	08/14/14 03:51 PM	ICP-MS4_140814B
1407367-12B	DUP-2	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:11 PM	TITRATOR_140801B
	DUP-2	Aqueous	E300	Anions by IC method - Water	64978	10	07/31/14 06:29 PM	IC2_140731B
	DUP-2	Aqueous	E300	Anions by IC method - Water	64978	100	07/31/14 09:38 PM	IC2_140731B
	DUP-2	Aqueous	M2540C	Total Dissolved Solids	65075	1	08/06/14 09:18 PM	WC_140805C
1407367-13A	MW-12	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 03:20 PM	ICP-MS3_140814A
	MW-12	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/14/14 02:22 PM	ICP-MS4_140814B

Lab Order: 1407367
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1407367-14A	MW-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	50	08/14/14 02:24 PM	ICP-MS4_140814B
	MW-15	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65007	500	08/14/14 03:26 PM	ICP-MS3_140814A

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-16
Project:	RRC-Ballinger	**Lab ID:**	1407367-01
Project No:	219393	**Collection Date:**	07/30/14 10:55 AM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2130	50.0	150		mg/L	500	08/14/14 02:28 PM
Magnesium	905	50.0	150		mg/L	500	08/14/14 02:28 PM
Potassium	16.4	5.00	15.0		mg/L	50	08/11/14 01:56 PM
Sodium	3510	50.0	150		mg/L	500	08/14/14 02:28 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	72.1	3.00	10.0		mg/L	10	07/31/14 02:48 PM
Chloride	9220	300	1000		mg/L	1000	07/31/14 04:21 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 02:48 PM
Sulfate	1610	100	300		mg/L	100	07/31/14 03:35 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	260	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:01 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:01 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:01 PM
Alkalinity, Total (As CaCO3)	260	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	21300	1000	1000		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-14
Project:	RRC-Ballinger	**Lab ID:**	1407367-02
Project No:	219393	**Collection Date:**	07/30/14 11:45 AM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2220	50.0	150		mg/L	500	08/14/14 04:46 PM
Magnesium	1780	50.0	150		mg/L	500	08/14/14 04:46 PM
Potassium	21.4	0.500	1.50		mg/L	5	08/14/14 03:47 PM
Sodium	3280	50.0	150		mg/L	500	08/14/14 04:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	70.6	3.00	10.0		mg/L	10	07/31/14 03:02 PM
Chloride	9090	300	1000		mg/L	1000	07/31/14 04:35 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 03:02 PM
Sulfate	2780	100	300		mg/L	100	07/31/14 03:49 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	444	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:13 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:13 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:13 PM
Alkalinity, Total (As CaCO3)	444	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:13 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	25400	1000	1000		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	DUP-1
Project:	RRC-Ballinger	**Lab ID:**	1407367-03
Project No:	219393	**Collection Date:**	07/30/14
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	1820	50.0	150		mg/L	500	08/14/14 04:48 PM
Magnesium	1740	50.0	150		mg/L	500	08/14/14 04:48 PM
Potassium	20.8	0.500	1.50		mg/L	5	08/14/14 03:49 PM
Sodium	3180	50.0	150		mg/L	500	08/14/14 04:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	69.8	3.00	10.0		mg/L	10	07/31/14 03:17 PM
Chloride	9180	300	1000		mg/L	1000	07/31/14 04:50 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 03:17 PM
Sulfate	2740	100	300		mg/L	100	07/31/14 04:04 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	447	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:25 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:25 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:25 PM
Alkalinity, Total (As CaCO3)	447	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:25 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	20800	1000	1000		mg/L	1	08/06/14 09:18 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-8
Project:	RRC-Ballinger	**Lab ID:**	1407367-04
Project No:	219393	**Collection Date:**	07/30/14 12:05 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	1720	50.0	150		mg/L	500	08/14/14 02:30 PM
Magnesium	1350	50.0	150		mg/L	500	08/14/14 02:30 PM
Potassium	18.2	5.00	15.0		mg/L	50	08/11/14 01:58 PM
Sodium	2190	50.0	150		mg/L	500	08/14/14 02:30 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	6.40	3.00	10.0	J	mg/L	10	07/31/14 03:47 PM
Chloride	7920	300	1000		mg/L	1000	07/31/14 10:22 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 03:47 PM
Sulfate	2370	100	300		mg/L	100	07/31/14 07:12 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	416	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:35 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:35 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:35 PM
Alkalinity, Total (As CaCO3)	416	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:35 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	22800	200	200		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-7
Project:	RRC-Ballinger	**Lab ID:**	1407367-05
Project No:	219393	**Collection Date:**	07/30/14 12:35 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2310	50.0	150		mg/L	500	08/14/14 02:31 PM
Magnesium	1290	50.0	150		mg/L	500	08/14/14 02:31 PM
Potassium	20.3	5.00	15.0		mg/L	50	08/11/14 02:00 PM
Sodium	2980	50.0	150		mg/L	500	08/14/14 02:31 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	8.69	3.00	10.0	J	mg/L	10	07/31/14 04:01 PM
Chloride	11000	300	1000		mg/L	1000	07/31/14 10:36 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 04:01 PM
Sulfate	1930	100	300		mg/L	100	07/31/14 07:27 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	324	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:45 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:45 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:45 PM
Alkalinity, Total (As CaCO3)	324	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 02:45 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	23900	1000	1000		mg/L	1	08/06/14 09:18 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-3
Project:	RRC-Ballinger	**Lab ID:**	1407367-06
Project No:	219393	**Collection Date:**	07/30/14 01:00 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2020	500	1500		mg/L	5000	08/14/14 02:35 PM
Magnesium	649	500	1500	J	mg/L	5000	08/14/14 02:35 PM
Potassium	16.2	5.00	15.0		mg/L	50	08/11/14 02:01 PM
Sodium	10200	500	1500		mg/L	5000	08/14/14 02:35 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	16.0	3.00	10.0		mg/L	10	07/31/14 04:16 PM
Chloride	19500	300	1000		mg/L	1000	07/31/14 10:51 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 04:16 PM
Sulfate	1900	100	300		mg/L	100	07/31/14 07:41 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	147	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:50 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:50 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:50 PM
Alkalinity, Total (As CaCO3)	147	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 02:50 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	39500	1000	1000		mg/L	1	08/06/14 09:18 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-2
Project:	RRC-Ballinger	**Lab ID:**	1407367-07
Project No:	219393	**Collection Date:**	07/30/14 01:50 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2830	50.0	150		mg/L	500	08/11/14 02:03 PM
Magnesium	610	5.00	15.0		mg/L	50	08/14/14 02:20 PM
Potassium	16.9	5.00	15.0		mg/L	50	08/14/14 02:20 PM
Sodium	2730	50.0	150		mg/L	500	08/11/14 02:03 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	5.14	3.00	10.0	J	mg/L	10	07/31/14 04:30 PM
Chloride	6650	300	1000		mg/L	1000	07/31/14 11:06 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 04:30 PM
Sulfate	1550	100	300		mg/L	100	07/31/14 07:56 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	223	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:11 PM
Alkalinity, Total (As CaCO3)	223	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	14700	200	200		mg/L	1	08/06/14 09:18 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-1
Project:	RRC-Ballinger	**Lab ID:**	1407367-08
Project No:	219393	**Collection Date:**	07/30/14 02:05 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	699	10.0	30.0		mg/L	100	08/14/14 02:26 PM
Magnesium	135	10.0	30.0		mg/L	100	08/14/14 02:26 PM
Potassium	14.9	10.0	30.0	J	mg/L	100	08/14/14 02:26 PM
Sodium	1880	10.0	30.0		mg/L	100	08/11/14 02:05 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<3.00	3.00	10.0		mg/L	10	07/31/14 05:01 PM
Chloride	3240	30.0	100		mg/L	100	07/31/14 08:11 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 05:01 PM
Sulfate	634	10.0	30.0		mg/L	10	07/31/14 05:01 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	358	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 03:39 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 03:39 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 03:39 PM
Alkalinity, Total (As CaCO3)	358	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 03:39 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	8860	200	200		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-4
Project:	RRC-Ballinger	**Lab ID:**	1407367-09
Project No:	219393	**Collection Date:**	07/30/14 02:30 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	803	50.0	150		mg/L	500	08/11/14 02:07 PM
Magnesium	227	1.00	3.00		mg/L	10	08/14/14 02:18 PM
Potassium	9.59	1.00	3.00		mg/L	10	08/14/14 02:18 PM
Sodium	2160	50.0	150		mg/L	500	08/11/14 02:07 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	3.45	3.00	10.0	J	mg/L	10	07/31/14 05:16 PM
Chloride	4480	30.0	100		mg/L	100	07/31/14 08:25 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 05:16 PM
Sulfate	981	10.0	30.0		mg/L	10	07/31/14 05:16 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	392	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:48 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:48 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:48 PM
Alkalinity, Total (As CaCO3)	392	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:48 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	10100	200	200		mg/L	1	08/06/14 09:18 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-9
Project:	RRC-Ballinger	**Lab ID:**	1407367-10
Project No:	219393	**Collection Date:**	07/30/14 03:00 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	2620	50.0	150		mg/L	500	08/11/14 02:09 PM
Magnesium	1120	50.0	150		mg/L	500	08/14/14 02:33 PM
Potassium	26.4	5.00	15.0		mg/L	50	08/14/14 03:40 PM
Sodium	2960	50.0	150		mg/L	500	08/11/14 02:09 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	7.70	3.00	10.0	J	mg/L	10	07/31/14 05:30 PM
Chloride	9930	300	1000		mg/L	1000	07/31/14 11:49 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 05:30 PM
Sulfate	2040	100	300		mg/L	100	07/31/14 08:40 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	275	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:56 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:56 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:56 PM
Alkalinity, Total (As CaCO3)	275	20.0	20.0		mg/L @ pH 4.52	1	08/01/14 03:56 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	19700	200	200		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-13
Project:	RRC-Ballinger	**Lab ID:**	1407367-11
Project No:	219393	**Collection Date:**	07/30/14 03:15 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	357	5.00	15.0		mg/L	50	08/08/14 12:21 PM
Magnesium	279	5.00	15.0		mg/L	50	08/08/14 12:21 PM
Potassium	9.40	0.500	1.50		mg/L	5	08/08/14 01:28 PM
Sodium	856	5.00	15.0		mg/L	50	08/08/14 12:21 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<3.00	3.00	10.0		mg/L	10	07/31/14 05:45 PM
Chloride	1140	30.0	100		mg/L	100	07/31/14 08:54 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 05:45 PM
Sulfate	2020	100	300		mg/L	100	07/31/14 08:54 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	198	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:01 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:01 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:01 PM
Alkalinity, Total (As CaCO3)	198	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	4670	50.0	50.0		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	DUP-2
Project:	RRC-Ballinger	**Lab ID:**	1407367-12
Project No:	219393	**Collection Date:**	07/30/14
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	391	5.00	15.0		mg/L	50	08/14/14 04:50 PM
Magnesium	284	5.00	15.0		mg/L	50	08/14/14 04:50 PM
Potassium	9.65	0.500	1.50		mg/L	5	08/14/14 03:51 PM
Sodium	878	5.00	15.0		mg/L	50	08/14/14 04:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<3.00	3.00	10.0		mg/L	10	07/31/14 06:29 PM
Chloride	1160	30.0	100		mg/L	100	07/31/14 09:38 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	07/31/14 06:29 PM
Sulfate	2080	100	300		mg/L	100	07/31/14 09:38 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	200	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:11 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:11 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:11 PM
Alkalinity, Total (As CaCO3)	200	20.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:11 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	4680	50.0	50.0		mg/L	1	08/06/14 09:18 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-12
Project:	RRC-Ballinger	**Lab ID:**	1407367-13
Project No:	219393	**Collection Date:**	07/30/14 03:35 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Calcium	2070	50.0	150		mg/L	500	08/14/14 03:20 PM
Magnesium	862	5.00	15.0		mg/L	50	08/14/14 02:22 PM
Potassium	17.9	5.00	15.0		mg/L	50	08/14/14 02:22 PM
Sodium	3850	50.0	150		mg/L	500	08/14/14 03:20 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-15
Project:	RRC-Ballinger	**Lab ID:**	1407367-14
Project No:	219393	**Collection Date:**	07/30/14 03:45 PM
Lab Order:	1407367	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **SW**
Calcium	898	50.0	150		mg/L	500	08/14/14 03:26 PM
Magnesium	603	5.00	15.0		mg/L	50	08/14/14 02:24 PM
Potassium	15.4	5.00	15.0		mg/L	50	08/14/14 02:24 PM
Sodium	1590	50.0	150		mg/L	500	08/14/14 03:26 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_140523A

Sample ID **DCS-63705-1** Batch ID: **63705** TestNo: **SW6020A** Units: **mg/L**
SampType: **DCS** Run ID: **ICP-MS3_140523A** Analysis Date: **5/23/2014 12:47:00 PM** Prep Date: **5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0222	0.300	0.0250	0	88.7	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_140728A

Sample ID **DCS-63705-1**	Batch ID: **63705**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **DCS**	Run ID: **ICP-MS3_140728A**	Analysis Date: **7/28/2014 1:35:00 PM**	Prep Date: **5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.0210	0.300	0.0250	0	83.8	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS3_140814A

Sample ID **ILCVL-140814**	Batch ID: **R74922**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_140814A**	Analysis Date: **8/14/2014 2:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0756	0.300	0.100	0	75.6	70	130			
Sodium	0.128	0.300	0.100	0	128	70	130			

Sample ID **LCVL1-140814**	Batch ID: **R74922**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS3_140814A**	Analysis Date: **8/14/2014 3:44:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0620	0.300	0.100	0	62.0	70	130			S
Sodium	0.113	0.300	0.100	0	113	70	130			

Sample ID **ICV1-140814**	Batch ID: **R74922**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS3_140814A**	Analysis Date: **8/14/2014 1:59:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.70	0.300	2.50	0	108	90	110			
Sodium	2.72	0.300	2.50	0	109	90	110			

Sample ID **CCV1-140814**	Batch ID: **R74922**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS3_140814A**	Analysis Date: **8/14/2014 3:32:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.22	0.300	5.00	0	104	90	110			
Sodium	5.19	0.300	5.00	0	104	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140522C

Sample ID	**DCS-63705-1**	Batch ID:	**63705**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS**	Run ID:	**ICP-MS4_140522C**	Analysis Date:	**5/22/2014 3:16:00 PM**	Prep Date:	**5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0279	0.300	0.0250	0	111	80	120	0	0	

Sample ID	**DCS-63705-2**	Batch ID:	**63705**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS2**	Run ID:	**ICP-MS4_140522C**	Analysis Date:	**5/22/2014 3:18:00 PM**	Prep Date:	**5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.107	0.300	0.100	0	107	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140724A

Sample ID	**DCS-63705-1**	Batch ID:	**63705**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS**	Run ID:	**ICP-MS4_140724A**	Analysis Date:	**7/24/2014 2:00:00 PM**	Prep Date:	**5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	0.0271	0.300	0.0250	0	109	80	120	0	0	

Sample ID	**DCS-63705-2**	Batch ID:	**63705**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**DCS2**	Run ID:	**ICP-MS4_140724A**	Analysis Date:	**7/24/2014 2:02:00 PM**	Prep Date:	**5/22/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.0879	0.300	0.100	0	87.9	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

The QC data in batch 65007 applies to the following samples: 1407367-01A, 1407367-02A, 1407367-03A, 1407367-04A, 1407367-05A, 1407367-06A, 1407367-07A, 1407367-08A, 1407367-09A, 1407367-10A, 1407367-11A, 1407367-12A, 1407367-13A, 1407367-14A

Sample ID **1407367-11A PDS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:25:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	614	15.0	250	357	103	80	120			
Magnesium	544	15.0	250	279	106	80	120			
Sodium	1120	15.0	250	856	106	80	120			

Sample ID **1407367-11A MS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:27:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	350	15.0	5.00	357	-146	80	120			S
Magnesium	275	15.0	5.00	279	-96.4	80	120			S
Sodium	829	15.0	5.00	856	-528	80	120			S

Sample ID **1407367-11A MSD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 12:29:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	357	15.0	5.00	357	1.82	80	120	2.10	15	S
Magnesium	283	15.0	5.00	279	75.2	80	120	3.08	15	S
Sodium	843	15.0	5.00	856	-248	80	120	1.67	15	S

Sample ID **1407367-11A SD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:30:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	10.2	7.50	0	9.40				7.75	10	

Sample ID **1407367-11A SD** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:48:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	365	75.0	0	357				2.31	10	
Magnesium	276	75.0	0	279				1.12	10	
Sodium	858	75.0	0	856				0.330	10	

Sample ID **1407367-11A PDS** Batch ID: **65007** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 1:50:00 PM** Prep Date: **8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	37.8	1.50	25.0	9.40	113	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID	**1407367-11A MS**	Batch ID:	**65007**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**ICP-MS4_140808B**	Analysis Date:	**8/8/2014 1:51:00 PM**	Prep Date:	**8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	14.1	1.50	5.00	9.40	93.3	80	120			

Sample ID	**1407367-11A MSD**	Batch ID:	**65007**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**ICP-MS4_140808B**	Analysis Date:	**8/8/2014 1:53:00 PM**	Prep Date:	**8/4/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	15.0	1.50	5.00	9.40	113	80	120	6.77	15	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID **ICV-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 11:15:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.49	0.300	2.50	0	99.8	90	110			
Magnesium	2.69	0.300	2.50	0	107	90	110			
Potassium	2.54	0.300	2.50	0	102	90	110			
Sodium	2.72	0.300	2.50	0	109	90	110			

Sample ID **LCVL-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 11:42:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.130	0.300	0.100	0	130	70	130			
Magnesium	0.0986	0.300	0.100	0	98.6	70	130			
Potassium	0.0983	0.300	0.100	0	98.3	70	130			
Sodium	0.0983	0.300	0.100	0	98.3	70	130			

Sample ID **CCV1-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 1:07:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.82	0.300	5.00	0	96.3	90	110			
Magnesium	4.98	0.300	5.00	0	99.6	90	110			
Potassium	5.19	0.300	5.00	0	104	90	110			
Sodium	4.94	0.300	5.00	0	98.8	90	110			

Sample ID **LCVL1-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 1:24:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.153	0.300	0.100	0	153	70	130			S
Magnesium	0.105	0.300	0.100	0	105	70	130			
Potassium	0.116	0.300	0.100	0	116	70	130			
Sodium	0.116	0.300	0.100	0	116	70	130			

Sample ID **CCV2-140808**	Batch ID: **R74813**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140808B**	Analysis Date: **8/8/2014 2:03:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.31	0.300	5.00	0	106	90	110			
Magnesium	5.22	0.300	5.00	0	104	90	110			
Potassium	5.51	0.300	5.00	0	110	90	110			
Sodium	5.20	0.300	5.00	0	104	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140808B

Sample ID **LCVL2-140808** Batch ID: **R74813** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_140808B** Analysis Date: **8/8/2014 2:08:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.152	0.300	0.100	0	152	70	130			S
Magnesium	0.104	0.300	0.100	0	104	70	130			
Potassium	0.117	0.300	0.100	0	117	70	130			
Sodium	0.120	0.300	0.100	0	120	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

Sample ID **ICV2-140811**	Batch ID: **R74837**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 1:09:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.68	0.300	2.50	0	107	90	110			
Potassium	2.66	0.300	2.50	0	107	90	110			
Sodium	2.75	0.300	2.50	0	110	90	110			

Sample ID **ILCVL2-140811**	Batch ID: **R74837**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 1:17:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0918	0.300	0.100	0	91.8	70	130			
Potassium	0.104	0.300	0.100	0	104	70	130			
Sodium	0.0690	0.300	0.100	0	69.0	70	130			S

Sample ID **CCV6-140811**	Batch ID: **R74837**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 2:24:00 PM**	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			
Potassium	5.11	0.300	5.00	0	102	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			

Sample ID **LCVL6-140811**	Batch ID: **R74837**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 2:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Potassium	0.109	0.300	0.100	0	109	70	130			
Sodium	0.0568	0.300	0.100	0	56.8	70	130			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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID **ICV-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 10:19:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.52	0.300	2.50	0	101	90	110			
Magnesium	2.71	0.300	2.50	0	109	90	110			
Potassium	2.67	0.300	2.50	0	107	90	110			
Sodium	2.72	0.300	2.50	0	109	90	110			

Sample ID **LCVL-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 10:23:00 AM**	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	0.103	0.300	0.100	0	103	70	130			
Potassium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.124	0.300	0.100	0	124	70	130			

Sample ID **CCV5-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.98	0.300	5.00	0	99.6	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			
Potassium	5.02	0.300	5.00	0	100	90	110			
Sodium	5.08	0.300	5.00	0	102	90	110			

Sample ID **LCVL5-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:14:00 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	0.105	0.300	0.100	0	105	70	130			
Potassium	0.109	0.300	0.100	0	109	70	130			
Sodium	0.116	0.300	0.100	0	116	70	130			

Sample ID **CCV6-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:37:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.97	0.300	5.00	0	99.3	90	110			
Magnesium	5.16	0.300	5.00	0	103	90	110			
Potassium	5.00	0.300	5.00	0	100	90	110			
Sodium	5.16	0.300	5.00	0	103	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

Sample ID **LCVL6-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:41:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.104	0.300	0.100	0	104	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Potassium	0.112	0.300	0.100	0	112	70	130			
Sodium	0.118	0.300	0.100	0	118	70	130			

Sample ID **CCV7-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 3:22:00 PM**	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 **LCVL7-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 3:26:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.113	0.300	0.100	0	113	70	130			

Sample ID **CCV8-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 3:53:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	5.16	0.300	5.00	0	103	90	110			

Sample ID **LCVL8-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 3:57:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.122	0.300	0.100	0	122	70	130			

Sample ID **CCV9-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 4:29:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.88	0.300	5.00	0	97.6	90	110			
Magnesium	5.10	0.300	5.00	0	102	90	110			
Sodium	5.07	0.300	5.00	0	101	90	110			

Sample ID **LCVL9-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 4:35:00 PM**	Prep Date:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID **LCVL9-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 4:35:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.109	0.300	0.100	0	109	70	130			
Magnesium	0.106	0.300	0.100	0	106	70	130			
Sodium	0.164	0.300	0.100	0	164	70	130			S

Sample ID **CCV10-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 4:52:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.87	0.300	5.00	0	97.4	90	110			
Magnesium	5.14	0.300	5.00	0	103	90	110			
Sodium	5.15	0.300	5.00	0	103	90	110			

Sample ID **LCVL10-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 4:56:00 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			
Sodium	0.148	0.300	0.100	0	148	70	130			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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140718A

Sample ID **DCS-64741**	Batch ID: **64741**	TestNo: **E300**	Units: **mg/L**
SampType: **DCS**	Run ID: **IC_140718A**	Analysis Date: **7/18/2014 10:24:50 AM**	Prep Date: **7/18/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	0.925	1.00	1.000	0	92.5	80	120	0	0	
Chloride	0.461	1.00	0.5000	0	92.2	80	120	0	0	
Nitrate-N	0.245	0.500	0.2500	0	97.8	80	120	0	0	
Sulfate	1.37	3.00	1.500	0	91.5	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140731B

The QC data in batch 64971 applies to the following samples: 1407367-01B, 1407367-02B, 1407367-03B

Sample ID	**MB-64971**	Batch ID:	**64971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**IC_140731B**	Analysis Date:	**7/31/2014 10:45:14 AM**	Prep Date:	**7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID	**LCS-64971**	Batch ID:	**64971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**IC_140731B**	Analysis Date:	**7/31/2014 10:59:51 AM**	Prep Date:	**7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	19.1	1.00	20.00	0	95.5	90	110			
Chloride	9.60	1.00	10.00	0	96.0	90	110			
Nitrate-N	4.82	0.500	5.000	0	96.4	90	110			
Sulfate	28.6	3.00	30.00	0	95.5	90	110			

Sample ID	**LCSD-64971**	Batch ID:	**64971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**LCSD**	Run ID:	**IC_140731B**	Analysis Date:	**7/31/2014 11:14:27 AM**	Prep Date:	**7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.8	1.00	20.00	0	93.8	90	110	1.82	20	
Chloride	9.41	1.00	10.00	0	94.1	90	110	1.98	20	
Nitrate-N	4.74	0.500	5.000	0	94.8	90	110	1.63	20	
Sulfate	28.0	3.00	30.00	0	93.5	90	110	2.11	20	

Sample ID	**1407358-06BMS**	Batch ID:	**64971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MS**	Run ID:	**IC_140731B**	Analysis Date:	**7/31/2014 5:30:31 PM**	Prep Date:	**7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.0	1.00	20.00	0	90.0	90	110			
Nitrate-N	3.98	0.500	4.516	0	88.0	90	110			S
Sulfate	49.7	3.00	20.00	31.07	93.0	90	110			

Sample ID	**1407358-06BMSD**	Batch ID:	**64971**	TestNo:	**E300**	Units:	**mg/L**
SampType:	**MSD**	Run ID:	**IC_140731B**	Analysis Date:	**7/31/2014 5:45:08 PM**	Prep Date:	**7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.0	1.00	20.00	0	89.8	90	110	0.234	20	
Nitrate-N	3.95	0.500	4.516	0	87.5	90	110	0.549	20	S
Sulfate	49.5	3.00	20.00	31.07	92.4	90	110	0.259	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140731B

Sample ID **1407358-06BMS**	Batch ID: **64971**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 5:59:44 PM**	Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	236	10.0	200.0	50.95	92.3	90	110			

Sample ID **1407358-06BMSD**	Batch ID: **64971**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 6:14:21 PM**	Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	235	10.0	200.0	50.95	91.9	90	110	0.400	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC_140731B

Sample ID **ICV-140731**	Batch ID: **R74640**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 10:26:49 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	47.1	1.00	50.00	0	94.2	90	110			
Chloride	23.8	1.00	25.00	0	95.1	90	110			
Nitrate-N	11.9	0.500	12.50	0	95.5	90	110			
Sulfate	70.6	3.00	75.00	0	94.1	90	110			

Sample ID **CCV1-140731**	Batch ID: **R74640**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 2:31:23 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	19.1	1.00	20.00	0	95.3	90	110			
Chloride	9.61	1.00	10.00	0	96.1	90	110			
Nitrate-N	4.83	0.500	5.000	0	96.6	90	110			
Sulfate	29.0	3.00	30.00	0	96.6	90	110			

Sample ID **CCV2-140731**	Batch ID: **R74640**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 5:05:08 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	18.9	1.00	20.00	0	94.6	90	110			
Chloride	9.44	1.00	10.00	0	94.4	90	110			
Nitrate-N	4.79	0.500	5.000	0	95.8	90	110			
Sulfate	28.6	3.00	30.00	0	95.3	90	110			

Sample ID **CCV3-140731**	Batch ID: **R74640**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC_140731B**	Analysis Date: **7/31/2014 8:11:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	19.1	1.00	20.00	0	95.4	90	110			
Chloride	9.56	1.00	10.00	0	95.6	90	110			
Nitrate-N	4.84	0.500	5.000	0	96.9	90	110			
Sulfate	28.8	3.00	30.00	0	95.9	90	110			

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140717A

Sample ID **DCS-64723**	Batch ID: **64723**	TestNo: **E300**		Units: **mg/L**	
SampType: **DCS**	Run ID: **IC2_140717A**	Analysis Date: **7/17/2014 2:43:08 PM**		Prep Date: **7/17/2014**	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	1.07	1.00	1.000	0	107	80	120	0	0	
Chloride	0.494	1.00	0.5000	0	98.7	80	120	0	0	
Nitrate-N	0.257	0.500	0.2500	0	103	80	120	0	0	
Sulfate	1.42	3.00	1.500	0	94.7	80	120	0	0	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140731B

The QC data in batch 64978 applies to the following samples: 1407367-04B, 1407367-05B, 1407367-06B, 1407367-07B, 1407367-08B, 1407367-09B, 1407367-10B, 1407367-11B, 1407367-12B

Sample ID **LCS-64978** Batch ID: **64978** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_140731B** Analysis Date: **7/31/2014 2:50:03 PM** Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.7	1.00	20.00	0	104	90	110			
Chloride	10.2	1.00	10.00	0	102	90	110			
Nitrate-N	4.98	0.500	5.000	0	99.5	90	110			
Sulfate	30.9	3.00	30.00	0	103	90	110			

Sample ID **LCSD-64978** Batch ID: **64978** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_140731B** Analysis Date: **7/31/2014 3:04:37 PM** Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.7	1.00	20.00	0	104	90	110	0.078	20	
Chloride	10.2	1.00	10.00	0	102	90	110	0.188	20	
Nitrate-N	4.97	0.500	5.000	0	99.4	90	110	0.105	20	
Sulfate	30.6	3.00	30.00	0	102	90	110	0.712	20	

Sample ID **MB-64978** Batch ID: **64978** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_140731B** Analysis Date: **7/31/2014 3:22:09 PM** Prep Date: **7/31/2014**

Analyte	Result	RL
Bromide	<0.300	1.00
Chloride	<0.300	1.00
Nitrate-N	<0.100	0.500
Sulfate	<1.00	3.00

Sample ID **1407367-11BMS** Batch ID: **64978** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_140731B** Analysis Date: **7/31/2014 5:59:57 PM** Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	220	10.0	200.0	0	110	90	110			
Nitrate-N	45.3	5.00	45.16	0	100	90	110			

Sample ID **1407367-11BMSD** Batch ID: **64978** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_140731B** Analysis Date: **7/31/2014 6:14:32 PM** Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	220	10.0	200.0	0	110	90	110	0.141	20	
Nitrate-N	45.5	5.00	45.16	0	101	90	110	0.468	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140731B

Sample ID **1407367-11BMS**	Batch ID: **64978**	TestNo: **E300**	Units: **mg/L**
SampType: **MS**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 9:09:25 PM**	Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3100	100	2000	1142	97.9	90	110			
Sulfate	4120	300	2000	2024	105	90	110			

Sample ID **1407367-11BMSD**	Batch ID: **64978**	TestNo: **E300**	Units: **mg/L**
SampType: **MSD**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 9:24:00 PM**	Prep Date: **7/31/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	3090	100	2000	1142	97.4	90	110	0.286	20	
Sulfate	4120	300	2000	2024	105	90	110	0.000	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140731B

Sample ID **ICV-140731**	Batch ID: **R74646**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 9:09:31 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	51.0	1.00	50.00	0	102	90	110			
Chloride	24.8	1.00	25.00	0	99.3	90	110			
Nitrate-N	12.4	0.500	12.50	0	99.6	90	110			
Sulfate	75.5	3.00	75.00	0	101	90	110			

Sample ID **CCV2-140731**	Batch ID: **R74646**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 2:11:41 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.4	1.00	20.00	0	102	90	110			
Chloride	10.0	1.00	10.00	0	100	90	110			
Nitrate-N	4.93	0.500	5.000	0	98.5	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID **CCV3-140731**	Batch ID: **R74646**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 6:58:15 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.7	1.00	20.00	0	104	90	110			
Chloride	10.1	1.00	10.00	0	101	90	110			
Nitrate-N	4.98	0.500	5.000	0	99.6	90	110			
Sulfate	30.6	3.00	30.00	0	102	90	110			

Sample ID **CCV4-140731**	Batch ID: **R74646**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140731B**	Analysis Date: **7/31/2014 10:07:43 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.1	1.00	10.00	0	101	90	110			
Sulfate	30.7	3.00	30.00	0	102	90	110			

Sample ID **CCV5-140731**	Batch ID: **R74646**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140731B**	Analysis Date: **8/1/2014 1:17:11 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	10.0	1.00	10.00	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

The QC data in batch 64991 applies to the following samples: 1407367-01B, 1407367-02B, 1407367-03B, 1407367-04B, 1407367-05B, 1407367-06B, 1407367-07B

Sample ID **MB-64991** Batch ID: **64991** TestNo: **M2320 B** Units: **mg/L @ pH 4.46**
SampType: **MBLK** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 12:19:00 PM** Prep Date: **8/1/2014**

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

Sample ID **LCS-64991** Batch ID: **64991** TestNo: **M2320 B** Units: **mg/L @ pH 4.2**
SampType: **LCS** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 12:23:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	54.2	20.0	50.00	0	108	74	129			

Sample ID **1408007-05B DUP** Batch ID: **64991** TestNo: **M2320 B** Units: **mg/L @ pH 4.49**
SampType: **DUP** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 12:59:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	283	20.0	0	273.0				3.46	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	283	20.0	0	273.0				3.46	20	

Sample ID **1407367-07B DUP** Batch ID: **64991** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 3:16:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	221	20.0	0	222.7				0.812	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	221	20.0	0	222.7				0.812	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

The QC data in batch 64992 applies to the following samples: 1407367-08B, 1407367-09B, 1407367-10B, 1407367-11B, 1407367-12B

Sample ID **MB-64992**	Batch ID: **64992**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **MBLK**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 3:27:00 PM**	Prep Date: **8/1/2014**

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

Sample ID **LCS-64992**	Batch ID: **64992**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.43**
SampType: **LCS**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 3:31:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.4	20.0	50.00	0	105	74	129			

Sample ID **1407367-11B DUP**	Batch ID: **64992**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.51**
SampType: **DUP**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 4:06:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	201	20.0	0	198.2				1.35	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	201	20.0	0	198.2				1.35	20	

Sample ID **1408010-01B DUP**	Batch ID: **64992**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.5**
SampType: **DUP**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 5:09:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	132	20.0	0	131.7				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	132	20.0	0	131.7				0	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

Sample ID **ICV-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.19**
SampType: **ICV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 12:17:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	91.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID **CCV1-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 1:30:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	16.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	83.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.2	20.0	100.0	0	99.2	90	110			

Sample ID **CCV2-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 2:55:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	79.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.2	20.0	100.0	0	99.2	90	110			

Sample ID **CCV3-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 4:25:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.7	20.0	100.0	0	98.7	90	110			

Sample ID **CCV4-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 5:14:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	11.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	87.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	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: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140805C

The QC data in batch 65075 applies to the following samples: 1407367-01B, 1407367-02B, 1407367-03B, 1407367-04B, 1407367-05B, 1407367-06B, 1407367-07B, 1407367-08B, 1407367-09B, 1407367-10B, 1407367-11B, 1407367-12B

Sample ID **MB-65075** Batch ID: **65075** TestNo: **M2540C** Units: **mg/L**
SampType: **MBLK** Run ID: **WC_140805C** Analysis Date: **8/6/2014 9:18:00 PM** Prep Date: **8/5/2014**

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

Sample ID **LCS-65075** Batch ID: **65075** TestNo: **M2540C** Units: **mg/L**
SampType: **LCS** Run ID: **WC_140805C** Analysis Date: **8/6/2014 9:18:00 PM** Prep Date: **8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	749	10.0	745.6	0	100	90	113			

Sample ID **1407361-01C-DUP** Batch ID: **65075** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_140805C** Analysis Date: **8/6/2014 9:18:00 PM** Prep Date: **8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4560	50.0	0	4570				0.219	5	

Sample ID **1407367-11B-DUP** Batch ID: **65075** TestNo: **M2540C** Units: **mg/L**
SampType: **DUP** Run ID: **WC_140805C** Analysis Date: **8/6/2014 9:18:00 PM** Prep Date: **8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	4660	50.0	0	4675				0.429	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

CLIENT: TRC Environmental Corp.
Work Order: 1407367
Project: RRC-Ballinger

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Bromide	0.300	1.00
Chloride	0.300	1.00
Nitrate-N	0.100	0.500
Nitrite-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: M2320 B	**MDL**	**MQL**
Analyte	**ıg/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

August 27, 2014

Shannon Hoover
TRC Environmental Corp.
505 East Huntland Drive
Suite 250
Austin, Texas 78752
TEL: (512) 329-6080
FAX (512) 329-8750

Order No.: 1408010

RE: RRC-Ballinger

Dear Shannon Hoover:

DHL Analytical, Inc. received 10 sample(s) on 8/1/2014 for the analyses presented in the following report.

REVISION#1 This revision consists of removing Nitrite-N from the reported list of target analytes for all samples as per the client. Please replace this revised report with the original 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: T104704211-14-12

Table of Contents

DHL ANALYTICAL

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№ 62772

CHAIN-OF-CUSTODY

CLIENT: TRC Environmental
ADDRESS: 505 E Huntland Dr. Suite 250
PHONE: 512-329-6080 FAX/E-MAIL:
DATA REPORTED TO: shoover @ trcsolutions.com
ADDITIONAL REPORT COPIES TO: jward @ trcsolutions.com

DATE: 7/31/14 PAGE 1 OF 1
PO #: 71277 DHL WORK ORDER #: 1408010
PROJECT LOCATION OR NAME: RRC Ballinger
CLENT PROJECT #: 219393 COLLECTOR: J WARD

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

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

ANALYSES columns: (1) BTEX☐ MTBE☐ [METHOD 8021]; (2) TPH 1005☐ TPH 1006☐ HOLD 1006☐; (3) GRO [METHOD 8015]☐ DRO [METHOD 8105]☐; (4) VOC 8260☐ VOC 624☐ VOC 8260/5035☐; (5) SVOC 8270☐ PAH 8270☐ HOLD PAH☐ SVOC 625☐; (6) 8081 PEST☐ 608 PEST/PCB☐ 8270 PEST☐; (7) 8270 O-P PEST☐ 8082 PCB☐ 8270 PCB☐; (8) 8321 HERB☐ 8330 EXPL☐ PERCHLORATE☐; (9) METALS 6020☐ METALS 200.8☐ DISS. METALS☐; (10) RCRA☐ TX11☐ ____☐; (11) PH☐ HEX CHROM☐ ALKALINITY☒; (12) CHLORIDE☐ ANIONS See note ☒; (13) TCLP-SVOC☐ VOC☐ PEST☐ HERB☐; (14) TCLP-METALS☐ RCRA 8☐ TX-11☐ Pb☐; (15) RCI☐ TOX☐ FLASHPOINT☐; (16) TDS☒ TSS☐ % MOISTURE☐ CYANIDE☐; (17) Br, Cl, Nitrite, Nitrate, SO4; (18) Cations Ca, Mg, K, Na; (19) (blank)

Field Sample I.D.	DHL Lab #	Date	Time	Matrix	Container Type	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESERVED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	FIELD NOTES
CR-2500 DOWN	01	7/31/14	1000	WATER	500 & 250 poly	3		X		X	X											X	X				X	X	X		Run MS/MSD
CR-1500 DOWN	02	↓	1040	↓	↓	2		↓		↓	↓											↓	↓				↓	↓	↓		
CR-900 DOWN	03	↓	1130	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
CR-500 DOWN	04	↓	1230	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
CR-50 DOWN	05	↓	1310	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
CR-50 UP	06	↓	1350	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
CR-250 UP	07	↓	1415	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
CR-1000 UP	08	↓	1530	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
DUP-3	09	↓	–	↓	↓	↓		↓		↓	↓											↓	↓				↓	↓	↓		
MW-15	10	↓	1615	↓	500 poly	1				↓	↓											↓	↓				↓	↓			
TOTAL																															

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	8/1/14 1140	[signature]

☐ DHL DISPOSAL @ $5.00 each ☐ Return

TURN AROUND TIME
RUSH ☐ CALL FIRST
1 DAY ☐ CALL FIRST
2 DAY ☐
NORMAL ☒
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 1.2 THERM #: 57
CUSTODY SEALS: ☐ BROKEN ☐ INTACT ☒ NOT USED
☐ CARRIER BILL #:
☐ APC DELIVERY
☒ HAND DELIVERED

DHL Analytical, Inc.

Sample Receipt Checklist

Client Name TRC Environmental Corp. Date Received: 8/1/2014

Work Order Number 1408010 Received by JB

Checklist completed by: Signature 8/1/2014 Date Reviewed by Initials 8/1/2014 Date

Carrier name Hand Delivered

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shippping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	1.2 °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
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 _____

DHL Analytical, Inc.
Laboratory Review Checklist: Reportable Data

Project Name: RRC-Ballinger	**Date:** 8/18/2014
Reviewer Name: Angie O'Donnell	**Laboratory Work Order:** 1408010
Prep Batch Number(s): See Prep Dates Report	**Run Batch:** See Analytical Dates Report

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
R1	OI	**Chain-of-Custody (C-O-C)**					
		1) Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				**R1-01**
		2) Were all departures from standard conditions described in an exception report?			X		
R2	OI	**Sample and Quality Control (QC) Identification**					
		1) Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
		2) Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
R3	OI	**Test Reports**					
		1) Were all samples prepared and analyzed within holding times?	X				
		2) Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
		3) Were calculations checked by a peer or supervisor?	X				
		4) Were all analyte identifications checked by a peer or supervisor?	X				
		5) Were sample detection limits reported for all analytes not detected?	X				
		6) Were all results for soil and sediment samples reported on a dry weight basis?			X		
		7) Were % moisture (or solids) reported for all soil and sediment samples?			X		
		8) Were bulk soils/solids samples for volatile analysis extracted with methanol per EPA Method 5035?			X		
		9) If required for the project, TICs reported?			X		
R4	O	**Surrogate Recovery Data**					
		1) Were surrogates added prior to extraction?			X		
		2) Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
R5	OI	**Test Reports/Summary Forms for Blank Samples**					
		1) Were appropriate type(s) of blanks analyzed?	X				
		2) Were blanks analyzed at the appropriate frequency?	X				
		3) Where method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
		4) Were blank concentrations < MQL?	X				
R6	OI	**Laboratory Control Samples (LCS):**					
		1) Were all COCs included in the LCS?	X				
		2) Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
		3) Were LCSs analyzed at the required frequency?	X				
		4) Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
		5) Does the detectability data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
		6) Was the LCSD RPD within QC limits (if applicable)?	X				
R7	OI	**Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Data**					
		1) Were the project/method specified analytes included in the MS and MSD?	X				
		2) Were MS/MSD analyzed at the appropriate frequency?	X				
		3) Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?		X			**R7-03**
		4) Were MS/MSD RPDs within laboratory QC limits?	X				
R8	OI	**Analytical Duplicate Data**					
		1) Were appropriate analytical duplicates analyzed for each matrix?	X				
		2) Were analytical duplicates analyzed at the appropriate frequency?	X				
		3) Were RPDs or relative standard deviations within the laboratory QC limits?	X				
R9	OI	**Method Quantitation Limits (MQLs):**					
		1) Are the MQLs for each method analyte included in the laboratory data package?	X				
		2) Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
		3) Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
R10	OI	**Other Problems/Anomalies**					
		1) Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				**R10-01**
		2) Was applicable and available technology used to lower the SDL to minimize the matrix interference affects on the sample results?	X				
		3) Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

DHL Analytical, Inc.
Laboratory Review Checklist (continued): Supporting Data

Project Name: RRC-Ballinger | **Date:** 8/18/2014

Reviewer Name: Angie O'Donnell | **Laboratory Work Order:** 1408010

#[1]	A[2]	Description	Yes	No	NA[3]	NR[4]	ER#[5]
S1	OI	**Initial Calibration (ICAL)**					
		1) Were response factors and/or relative response factors for each analyte within QC limits?	**X**				
		2) Were percent RSDs or correlation coefficient criteria met?	**X**				
		3) Was the number of standards recommended in the method used for all analytes?	**X**				
		4) Were all points generated between the lowest and highest standard used to calculate the curve?	**X**				
		5) Are ICAL data available for all instruments used?	**X**				
		6) Has the initial calibration curve been verified using an appropriate second source standard?	**X**				
S2	OI	**Initial and Continuing calibration Verification (ICCV and CCV) and Continuing Calibration blank (CCB):**					
		1) Was the CCV analyzed at the method-required frequency?	**X**				
		2) Were percent differences for each analyte within the method-required QC limits?		**X**			**S2-02**
		3) Was the ICAL curve verified for each analyte?	**X**				
		4) Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	**X**				
S3	O	**Mass Spectral Tuning:**					
		1) Was the appropriate compound for the method used for tuning?	**X**				
		2) Were ion abundance data within the method-required QC limits?	**X**				
S4	O	**Internal Standards (IS):**					
		1) Were IS area counts and retention times within the method-required QC limits?		**X**			**S4-01**
S5	OI	**Raw Data (NELAC Section 5.5.10)**					
		1) Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	**X**				
		2) Were data associated with manual integrations flagged on the raw data?	**X**				
S6	O	**Dual Column Confirmation**					
		1) Did dual column confirmation results meet the method-required QC?			**X**		
S7	O	**Tentatively Identified Compounds (TICs):**					
		1) If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			**X**		
S8	I	**Interference Check Sample (ICS) Results:**					
		1) Were percent recoveries within method QC limits?	**X**				
S9	I	**Serial Dilutions, Post Digestion Spikes, and Method of Standard Additions**					
		1) Were percent differences, recoveries, and the linearity within the QC limits specified in the method?		**X**			**S9-01**
S10	OI	**Method Detection Limit (MDL) Studies**					
		1) Was a MDL study performed for each reported analyte?	**X**				
		2) Is the MDL either adjusted or supported by the analysis of DCSs?	**X**				
S11	OI	**Proficiency Test Reports:**					
		1) Was the lab's performance acceptable on the applicable proficiency tests or evaluation studies?	**X**				
S12	OI	**Standards Documentation**					
		1) Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	**X**				
S13	OI	**Compound/Analyte Identification Procedures**					
		1) Are the procedures for compound/analyte identification documented?	**X**				
S14	OI	**Demonstration of Analyst Competency (DOC)**					
		1) Was DOC conducted consistent with NELAC Chapter 5 – Appendix C?	**X**				
		2) Is documentation of the analyst's competency up-to-date and on file?	**X**				
S15	OI	**Verification/Validation Documentation for Methods** (NELAC Chapter 5)					
		1) Are all the methods used to generate the data documented, verified, and validated, where applicable?	**X**				
S16	OI	**Laboratory Standard Operating Procedures (SOPs):**					
		1) Are laboratory SOPs current and on file for each method performed?	**X**				

1 Items identified by the letter "R" should be included in the laboratory data package submitted to the TCEQ in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period.
2 O = organic analyses; I = inorganic analyses (and general chemistry, when applicable).
3 NA = Not applicable.
4 NR = Not Reviewed.
5 ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

Laboratory Data Package Signature Page – RG-366/TRRP-13

This data package consists of:

This signature page, the laboratory review checklist, and the following reportable data:

R1 Field chain-of-custody documentation;
R2 Sample identification cross-reference;
R3 Test reports (analytical data sheets) for each environmental sample that includes:
  a) Items consistent with NELAC Chapter 5,
  b) dilution factors,
  c) preparation methods,
  d) cleanup methods, and
  e) if required for the project, tentatively identified compounds (TICs).
R4 Surrogate recovery data including:
  a) Calculated recovery (%R), and
  b) The laboratory's surrogate QC limits.
R5 Test reports/summary forms for blank samples;
R6 Test reports/summary forms for laboratory control samples (LCSs) including:
  a) LCS spiking amounts,
  b) Calculated %R for each analyte, and
  c) The laboratory's LCS QC limits.
R7 Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including:
  a) Samples associated with the MS/MSD clearly identified,
  b) MS/MSD spiking amounts,
  c) Concentration of each MS/MSD analyte measured in the parent and spiked samples,
  d) Calculated %Rs and relative percent differences (RPDs), and
  e) The laboratory's MS/MSD QC limits
R8 Laboratory analytical duplicate (if applicable) recovery and precision:
  a) The amount of analyte measured in the duplicate,
  b) The calculated RPD, and
  c) The laboratory's QC limits for analytical duplicates.
R9 List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix;
R10 Other problems or anomalies.

The Exception Report for every "No" or "Not Reviewed (NR)" item in Laboratory Review checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge that all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information or data affecting the quality of the data has been knowingly withheld.

This laboratory was last inspected by TCEQ on May 6-10, 2013. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

John DuPont – General Manager

Scott Schroeder – Technical Director

Signature

08/27/14

Date

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1408010

CASE NARRATIVE

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

Method SW6020A - Metals Analysis
Method E300 - Anions Analysis
Method M2320 B - Alkalinity Analysis
Method M2540C - TDS Analysis

Exception Report R1-01

The samples were received and log-in performed on 8/1/2014. A total of 10 samples were received and analyzed. The samples arrived in good condition and were properly packaged.

Exception Report R7-03

For Anions Analysis, the recoveries of Chloride for the Matrix Spike and Matrix Spike Duplicate (1408010-01 MS/MSD) were outside of the method control limits. These are flagged accordingly in the QC Summary Report. These anions were within method control limits in the associated LCS. The reference sample selected for the QC was from this workorder. No further corrective action was taken.

For Metals Analysis, the recovery of Calcium for the Matrix Spike (1408010-01 MS) was below the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated LCS. The reference sample selected for the QC Sample was from this workorder. No further corrective action was taken.

Exception Report R10-01

For Anions analysis the samples were diluted due to the nature of the samples.

Exception Report S2-02

For Metals Analysis, performed on 8/11/2014, the recovery of Sodium for the Low Level Calibration Verifications (ILCVL2-140811, LCVL6-140811) was below the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was detected in the associated samples at greater than 10x the amount detected in the LCVLs. No further corrective actions were taken.

Exception Report S4-01

For Metals Analysis, the response factor of Internal Standard Scandium 45 for the Matrix Spike and Post Digestion Spike (1408010-01 MS/PDS) was below the method control limits. The recoveries of

the affected analytes are within method control limits in the associated MSD and SD. No further corrective action was taken.

Exception Report S9-01

For Metals Analysis, the recovery of Potassium for the Post Digestion Spike (1408010-01 PDS) was slightly above the method control limits. This is flagged accordingly in the QC Summary Report. This analyte was within method control limits in the associated Serial Dilution. No further corrective action was taken.

DHL Analytical, Inc.

Date: *18-Aug-14*

CLIENT: TRC Environmental Corp.
Project: RRC-Ballinger
Lab Order: 1408010

Work Order Sample Summary

Lab Smp ID	Client Sample ID	Tag Number	Date Collected	Date Recved
1408010-01	CR-2500 DOWN		07/31/14 10:00 AM	8/1/2014
1408010-02	CR-1500 DOWN		07/31/14 10:40 AM	8/1/2014
1408010-03	CR-900 DOWN		07/31/14 11:30 AM	8/1/2014
1408010-04	CR-500 DOWN		07/31/14 12:30 PM	8/1/2014
1408010-05	CR-50 DOWN		07/31/14 01:10 PM	8/1/2014
1408010-06	CR-50 UP		07/31/14 01:50 PM	8/1/2014
1408010-07	CR-250 UP		07/31/14 02:15 PM	8/1/2014
1408010-08	CR-1000 UP		07/31/14 03:30 PM	8/1/2014
1408010-09	DUP-3		07/31/14	8/1/2014
1408010-10	MW-15		07/31/14 04:15 PM	8/1/2014

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408010-01A	CR-2500 DOWN	07/31/14 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-2500 DOWN	07/31/14 10:00 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-01B	CR-2500 DOWN	07/31/14 10:00 AM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-2500 DOWN	07/31/14 10:00 AM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-2500 DOWN	07/31/14 10:00 AM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-02A	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-02B	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-1500 DOWN	07/31/14 10:40 AM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-03A	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-03B	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-900 DOWN	07/31/14 11:30 AM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-04A	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-04B	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-500 DOWN	07/31/14 12:30 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-05A	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-05B	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408010-05B	CR-50 DOWN	07/31/14 01:10 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-06A	CR-50 UP	07/31/14 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-50 UP	07/31/14 01:50 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-06B	CR-50 UP	07/31/14 01:50 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-50 UP	07/31/14 01:50 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-50 UP	07/31/14 01:50 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-50 UP	07/31/14 01:50 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-07A	CR-250 UP	07/31/14 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-250 UP	07/31/14 02:15 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-07B	CR-250 UP	07/31/14 02:15 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-250 UP	07/31/14 02:15 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-250 UP	07/31/14 02:15 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-250 UP	07/31/14 02:15 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-08A	CR-1000 UP	07/31/14 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	CR-1000 UP	07/31/14 03:30 PM	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-08B	CR-1000 UP	07/31/14 03:30 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	CR-1000 UP	07/31/14 03:30 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-1000 UP	07/31/14 03:30 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	CR-1000 UP	07/31/14 03:30 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-09A	DUP-3	07/31/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
	DUP-3	07/31/14	Aqueous	SW3005A	Aq Prep Metals : ICP-MS	08/06/14 04:59 PM	65092
1408010-09B	DUP-3	07/31/14	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	DUP-3	07/31/14	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	DUP-3	07/31/14	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	DUP-3	07/31/14	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087
1408010-10A	MW-15	07/31/14 04:15 PM	Aqueous	M2320 B	Alkalinity Preparation	08/01/14 11:53 AM	64992
	MW-15	07/31/14 04:15 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986
	MW-15	07/31/14 04:15 PM	Aqueous	E300	Anion Preparation	08/01/14 09:51 AM	64986

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

PREP DATES REPORT

Sample ID	Client Sample ID	Collection Date	Matrix	Test Number	Test Name	Prep Date	Batch ID
1408010-10A	MW-15	07/31/14 04:15 PM	Aqueous	M2540C	TDS Preparation	08/05/14 09:26 AM	65087

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408010-01A	CR-2500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:42 PM	ICP-MS4_140814B
	CR-2500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:40 PM	ICP-MS4_140811C
1408010-01B	CR-2500 DOWN	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 05:05 PM	TITRATOR_140801B
	CR-2500 DOWN	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 01:02 PM	IC2_140801B
	CR-2500 DOWN	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-02A	CR-1500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:44 PM	ICP-MS4_140811C
	CR-1500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:46 PM	ICP-MS4_140814B
1408010-02B	CR-1500 DOWN	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:16 PM	TITRATOR_140801B
	CR-1500 DOWN	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 01:16 PM	IC2_140801B
	CR-1500 DOWN	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 06:35 PM	IC2_140801B
	CR-1500 DOWN	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-03A	CR-900 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:46 PM	ICP-MS4_140811C
	CR-900 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:48 PM	ICP-MS4_140814B
1408010-03B	CR-900 DOWN	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:20 PM	TITRATOR_140801B
	CR-900 DOWN	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 01:31 PM	IC2_140801B
	CR-900 DOWN	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 06:50 PM	IC2_140801B
	CR-900 DOWN	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-04A	CR-500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:48 PM	ICP-MS4_140811C
	CR-500 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:50 PM	ICP-MS4_140814B
1408010-04B	CR-500 DOWN	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:29 PM	TITRATOR_140801B
	CR-500 DOWN	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 01:45 PM	IC2_140801B
	CR-500 DOWN	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 07:04 PM	IC2_140801B
	CR-500 DOWN	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-05A	CR-50 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:50 PM	ICP-MS4_140811C
	CR-50 DOWN	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:52 PM	ICP-MS4_140814B
1408010-05B	CR-50 DOWN	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:33 PM	TITRATOR_140801B
	CR-50 DOWN	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 07:19 PM	IC2_140801B
	CR-50 DOWN	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 02:00 PM	IC2_140801B

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408010-05B	CR-50 DOWN	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-06A	CR-50 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:52 PM	ICP-MS4_140811C
	CR-50 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:54 PM	ICP-MS4_140814B
1408010-06B	CR-50 UP	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:36 PM	TITRATOR_140801B
	CR-50 UP	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 02:31 PM	IC2_140801B
	CR-50 UP	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 07:33 PM	IC2_140801B
	CR-50 UP	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-07A	CR-250 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:54 PM	ICP-MS4_140811C
	CR-250 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	1	08/14/14 01:56 PM	ICP-MS4_140814B
1408010-07B	CR-250 UP	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:40 PM	TITRATOR_140801B
	CR-250 UP	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 02:46 PM	IC2_140801B
	CR-250 UP	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 07:48 PM	IC2_140801B
	CR-250 UP	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-08A	CR-1000 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:56 PM	ICP-MS4_140811C
	CR-1000 UP	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 01:58 PM	ICP-MS4_140814B
1408010-08B	CR-1000 UP	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:43 PM	TITRATOR_140801B
	CR-1000 UP	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 03:01 PM	IC2_140801B
	CR-1000 UP	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 08:02 PM	IC2_140801B
	CR-1000 UP	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-09A	DUP-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	5	08/11/14 02:58 PM	ICP-MS4_140811C
	DUP-3	Aqueous	SW6020A	Trace Metals: ICP-MS - Water	65092	50	08/14/14 02:00 PM	ICP-MS4_140814B
1408010-09B	DUP-3	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 04:47 PM	TITRATOR_140801B
	DUP-3	Aqueous	E300	Anions by IC method - Water	64986	1	08/01/14 03:15 PM	IC2_140801B
	DUP-3	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 08:17 PM	IC2_140801B
	DUP-3	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D
1408010-10A	MW-15	Aqueous	M2320 B	Alkalinity	64992	1	08/01/14 05:01 PM	TITRATOR_140801B
	MW-15	Aqueous	E300	Anions by IC method - Water	64986	10	08/01/14 03:30 PM	IC2_140801B
	MW-15	Aqueous	E300	Anions by IC method - Water	64986	100	08/01/14 08:32 PM	IC2_140801B

Lab Order: 1408010
Client: TRC Environmental Corp.
Project: RRC-Ballinger

ANALYTICAL DATES REPORT

Sample ID	Client Sample ID	Matrix	Test Number	Test Name	Batch ID	Dilution	Analysis Date	Run ID
1408010-10A	MW-15	Aqueous	M2540C	Total Dissolved Solids	65087	1	08/06/14 10:06 PM	WC_140805D

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-2500 DOWN
Project:	RRC-Ballinger	**Lab ID:**	1408010-01
Project No:	219393	**Collection Date:**	07/31/14 10:00 AM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	54.3	5.00	15.0		mg/L	50	08/14/14 01:42 PM
Magnesium	19.5	5.00	15.0		mg/L	50	08/14/14 01:42 PM
Potassium	7.01	0.500	1.50		mg/L	5	08/11/14 02:40 PM
Sodium	31.3	0.500	1.50		mg/L	5	08/11/14 02:40 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 01:02 PM
Chloride	48.4	0.300	1.00		mg/L	1	08/01/14 01:02 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 01:02 PM
Sulfate	72.7	1.00	3.00		mg/L	1	08/01/14 01:02 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	132	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 05:05 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 05:05 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 05:05 PM
Alkalinity, Total (As CaCO3)	132	20.0	20.0		mg/L @ pH 4.5	1	08/01/14 05:05 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	327	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-1500 DOWN
Project:	RRC-Ballinger	**Lab ID:**	1408010-02
Project No:	219393	**Collection Date:**	07/31/14 10:40 AM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	52.3	5.00	15.0		mg/L	50	08/14/14 01:46 PM
Magnesium	21.3	5.00	15.0		mg/L	50	08/14/14 01:46 PM
Potassium	6.95	0.500	1.50		mg/L	5	08/11/14 02:44 PM
Sodium	33.9	0.500	1.50		mg/L	5	08/11/14 02:44 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 01:16 PM
Chloride	56.1	3.00	10.0		mg/L	10	08/01/14 06:35 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 01:16 PM
Sulfate	80.2	1.00	3.00		mg/L	1	08/01/14 01:16 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	135	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:16 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:16 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:16 PM
Alkalinity, Total (As CaCO3)	135	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:16 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	387	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

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B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-900 DOWN
Project:	RRC-Ballinger	**Lab ID:**	1408010-03
Project No:	219393	**Collection Date:**	07/31/14 11:30 AM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	56.2	5.00	15.0		mg/L	50	08/14/14 01:48 PM
Magnesium	24.2	5.00	15.0		mg/L	50	08/14/14 01:48 PM
Potassium	6.94	0.500	1.50		mg/L	5	08/11/14 02:46 PM
Sodium	38.0	0.500	1.50		mg/L	5	08/11/14 02:46 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 01:31 PM
Chloride	69.7	3.00	10.0		mg/L	10	08/01/14 06:50 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 01:31 PM
Sulfate	87.8	1.00	3.00		mg/L	1	08/01/14 01:31 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	139	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:20 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:20 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:20 PM
Alkalinity, Total (As CaCO3)	139	20.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:20 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	370	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-500 DOWN
Project:	RRC-Ballinger	**Lab ID:**	1408010-04
Project No:	219393	**Collection Date:**	07/31/14 12:30 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	63.3	5.00	15.0		mg/L	50	08/14/14 01:50 PM
Magnesium	29.4	5.00	15.0		mg/L	50	08/14/14 01:50 PM
Potassium	6.87	0.500	1.50		mg/L	5	08/11/14 02:48 PM
Sodium	45.9	0.500	1.50		mg/L	5	08/11/14 02:48 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 01:45 PM
Chloride	90.2	3.00	10.0		mg/L	10	08/01/14 07:04 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 01:45 PM
Sulfate	106	1.00	3.00		mg/L	1	08/01/14 01:45 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	143	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:29 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:29 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:29 PM
Alkalinity, Total (As CaCO3)	143	20.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:29 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	469	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-50 DOWN
Project:	RRC-Ballinger	**Lab ID:**	1408010-05
Project No:	219393	**Collection Date:**	07/31/14 01:10 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	55.8	5.00	15.0		mg/L	50	08/14/14 01:52 PM
Magnesium	20.8	5.00	15.0		mg/L	50	08/14/14 01:52 PM
Potassium	7.36	0.500	1.50		mg/L	5	08/11/14 02:50 PM
Sodium	37.2	0.500	1.50		mg/L	5	08/11/14 02:50 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 02:00 PM
Chloride	57.7	3.00	10.0		mg/L	10	08/01/14 07:19 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 02:00 PM
Sulfate	75.0	1.00	3.00		mg/L	1	08/01/14 02:00 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	131	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:33 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:33 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:33 PM
Alkalinity, Total (As CaCO3)	131	20.0	20.0		mg/L @ pH 4.49	1	08/01/14 04:33 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	332	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

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J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-50 UP
Project:	RRC-Ballinger	**Lab ID:**	1408010-06
Project No:	219393	**Collection Date:**	07/31/14 01:50 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	50.6	5.00	15.0		mg/L	50	08/14/14 01:54 PM
Magnesium	20.3	5.00	15.0		mg/L	50	08/14/14 01:54 PM
Potassium	7.49	0.500	1.50		mg/L	5	08/11/14 02:52 PM
Sodium	36.9	0.500	1.50		mg/L	5	08/11/14 02:52 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 02:31 PM
Chloride	55.8	3.00	10.0		mg/L	10	08/01/14 07:33 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 02:31 PM
Sulfate	73.4	1.00	3.00		mg/L	1	08/01/14 02:31 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	130	10.0	20.0		mg/L @ pH 4.47	1	08/01/14 04:36 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	08/01/14 04:36 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.47	1	08/01/14 04:36 PM
Alkalinity, Total (As CaCO3)	130	20.0	20.0		mg/L @ pH 4.47	1	08/01/14 04:36 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	345	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-250 UP
Project:	RRC-Ballinger	**Lab ID:**	1408010-07
Project No:	219393	**Collection Date:**	07/31/14 02:15 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	45.3	0.500	1.50		mg/L	5	08/11/14 02:54 PM
Magnesium	20.1	0.100	0.300		mg/L	1	08/14/14 01:56 PM
Potassium	7.22	0.500	1.50		mg/L	5	08/11/14 02:54 PM
Sodium	37.0	0.500	1.50		mg/L	5	08/11/14 02:54 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 02:46 PM
Chloride	58.2	3.00	10.0		mg/L	10	08/01/14 07:48 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 02:46 PM
Sulfate	73.9	1.00	3.00		mg/L	1	08/01/14 02:46 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	127	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:40 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:40 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:40 PM
Alkalinity, Total (As CaCO3)	127	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 04:40 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	323	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	CR-1000 UP
Project:	RRC-Ballinger	**Lab ID:**	1408010-08
Project No:	219393	**Collection Date:**	07/31/14 03:30 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	58.8	5.00	15.0		mg/L	50	08/14/14 01:58 PM
Magnesium	22.6	5.00	15.0		mg/L	50	08/14/14 01:58 PM
Potassium	7.30	0.500	1.50		mg/L	5	08/11/14 02:56 PM
Sodium	38.1	0.500	1.50		mg/L	5	08/11/14 02:56 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 03:01 PM
Chloride	57.5	3.00	10.0		mg/L	10	08/01/14 08:02 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 03:01 PM
Sulfate	74.2	1.00	3.00		mg/L	1	08/01/14 03:01 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	138	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:43 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:43 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:43 PM
Alkalinity, Total (As CaCO3)	138	20.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:43 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	345	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	DUP-3
Project:	RRC-Ballinger	**Lab ID:**	1408010-09
Project No:	219393	**Collection Date:**	07/31/14
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
TRACE METALS: ICP-MS - WATER		**SW6020A**					Analyst: **RO**
Calcium	53.7	5.00	15.0		mg/L	50	08/14/14 02:00 PM
Magnesium	21.1	5.00	15.0		mg/L	50	08/14/14 02:00 PM
Potassium	7.13	0.500	1.50		mg/L	5	08/11/14 02:58 PM
Sodium	34.3	0.500	1.50		mg/L	5	08/11/14 02:58 PM
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<0.300	0.300	1.00		mg/L	1	08/01/14 03:15 PM
Chloride	56.9	3.00	10.0		mg/L	10	08/01/14 08:17 PM
Nitrate-N	<0.100	0.100	0.500		mg/L	1	08/01/14 03:15 PM
Sulfate	80.3	1.00	3.00		mg/L	1	08/01/14 03:15 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	134	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:47 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:47 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:47 PM
Alkalinity, Total (As CaCO3)	134	20.0	20.0		mg/L @ pH 4.5	1	08/01/14 04:47 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	396	10.0	10.0		mg/L	1	08/06/14 10:06 PM

Qualifiers:

ND - Not Detected at the SDL
J - Analyte detected between SDL and RL
B - Analyte detected in the associated Method Blank
DF- Dilution Factor
N - Parameter not NELAC certified
See Final Page of Report for MQLs and MDLs
S - Spike Recovery outside control limits
C - Sample Result or QC discussed in Case Narrative
RL - Reporting Limit (MQL adjusted for moisture and sample size)
SDL - Sample Detection Limit
E - TPH pattern not Gas or Diesel Range Pattern

DHL Analytical, Inc.

Date: *27-Aug-14*

CLIENT:	TRC Environmental Corp.	**Client Sample ID:**	MW-15
Project:	RRC-Ballinger	**Lab ID:**	1408010-10
Project No:	219393	**Collection Date:**	07/31/14 04:15 PM
Lab Order:	1408010	**Matrix:**	AQUEOUS

Analyses	Result	SDL	RL	Qual	Units	DF	Date Analyzed
ANIONS BY IC METHOD - WATER		**E300**					Analyst: **AV**
Bromide	<3.00	3.00	10.0		mg/L	10	08/01/14 03:30 PM
Chloride	2980	30.0	100		mg/L	100	08/01/14 08:32 PM
Nitrate-N	<1.00	1.00	5.00		mg/L	10	08/01/14 03:30 PM
Sulfate	1180	10.0	30.0		mg/L	10	08/01/14 03:30 PM
ALKALINITY		**M2320 B**					Analyst: **LM**
Alkalinity, Bicarbonate (As CaCO3)	335	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 05:01 PM
Alkalinity, Carbonate (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 05:01 PM
Alkalinity, Hydroxide (As CaCO3)	<10.0	10.0	20.0		mg/L @ pH 4.51	1	08/01/14 05:01 PM
Alkalinity, Total (As CaCO3)	335	20.0	20.0		mg/L @ pH 4.51	1	08/01/14 05:01 PM
TOTAL DISSOLVED SOLIDS		**M2540C**					Analyst: **MK**
Total Dissolved Solids (Residue, Filterable)	7300	200	200		mg/L	1	08/06/14 10:06 PM

Qualifiers:

- ND - Not Detected at the SDL
- J - Analyte detected between SDL and RL
- B - Analyte detected in the associated Method Blank
- DF- Dilution Factor
- N - Parameter not NELAC certified
- See Final Page of Report for MQLs and MDLs
- S - Spike Recovery outside control limits
- C - Sample Result or QC discussed in Case Narrative
- RL - Reporting Limit (MQL adjusted for moisture and sample size)
- SDL - Sample Detection Limit
- E - TPH pattern not Gas or Diesel Range Pattern

CLIENT: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

The QC data in batch 65092 applies to the following samples: 1408010-01A, 1408010-02A, 1408010-03A, 1408010-04A, 1408010-05A, 1408010-06A, 1408010-07A, 1408010-08A, 1408010-09A

Sample ID **MB-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 2:33:00 PM** Prep Date: **8/6/2014**

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

Sample ID **LCS-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 2:35:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.83	0.300	5.00	0	96.6	80	120			
Potassium	4.83	0.300	5.00	0	96.6	80	120			
Sodium	4.81	0.300	5.00	0	96.2	80	120			

Sample ID **LCSD-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 2:36:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	5.38	0.300	5.00	0	108	80	120	10.8	15	
Potassium	5.02	0.300	5.00	0	100	80	120	3.80	15	
Sodium	5.03	0.300	5.00	0	101	80	120	4.53	15	

Sample ID **1408010-01A SD** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 2:42:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	7.41	7.50	0	7.01				5.57	10	
Sodium	30.4	7.50	0	31.3				2.85	10	

Sample ID **1408010-01A PDS** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 3:02:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	37.5	1.50	25.0	7.01	122	80	120			S
Sodium	58.6	1.50	25.0	31.3	109	80	120			

Sample ID **1408010-01A MS** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 3:04:00 PM** Prep Date: **8/6/2014**

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

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

Sample ID **1408010-01A MS**	Batch ID: **65092**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MS**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 3:04:00 PM**	Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	55.7	1.50	5.00	52.2	70.0	80	120			S
Potassium	12.0	1.50	5.00	7.01	101	80	120			
Sodium	36.9	1.50	5.00	31.3	112	80	120			

Sample ID **1408010-01A MSD**	Batch ID: **65092**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **MSD**	Run ID: **ICP-MS4_140811C**	Analysis Date: **8/11/2014 3:06:00 PM**	Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	56.3	1.50	5.00	52.2	82.1	80	120	1.08	15	
Potassium	11.8	1.50	5.00	7.01	96.7	80	120	1.64	15	
Sodium	36.7	1.50	5.00	31.3	108	80	120	0.504	15	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

Sample ID	**ICV2-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**ICV**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 1:09:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.68	0.300	2.50	0	107	90	110			
Potassium	2.66	0.300	2.50	0	107	90	110			
Sodium	2.75	0.300	2.50	0	110	90	110			

Sample ID	**ILCVL2-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 1:17:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.0918	0.300	0.100	0	91.8	70	130			
Potassium	0.104	0.300	0.100	0	104	70	130			
Sodium	0.0690	0.300	0.100	0	69.0	70	130			S

Sample ID	**CCV6-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 2:24:00 PM**	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			
Potassium	5.11	0.300	5.00	0	102	90	110			
Sodium	5.06	0.300	5.00	0	101	90	110			

Sample ID	**LCVL6-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 2:29:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.107	0.300	0.100	0	107	70	130			
Potassium	0.109	0.300	0.100	0	109	70	130			
Sodium	0.0568	0.300	0.100	0	56.8	70	130			S

Sample ID	**CCV7-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**CCV**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 3:08:00 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			
Potassium	4.93	0.300	5.00	0	98.5	90	110			
Sodium	4.99	0.300	5.00	0	99.9	90	110			

Sample ID	**LCVL7-140811**	Batch ID:	**R74837**	TestNo:	**SW6020A**	Units:	**mg/L**
SampType:	**LCVL**	Run ID:	**ICP-MS4_140811C**	Analysis Date:	**8/11/2014 3:12:00 PM**	Prep Date:	

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140811C

Sample ID **LCVL7-140811** Batch ID: **R74837** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCVL** Run ID: **ICP-MS4_140811C** Analysis Date: **8/11/2014 3:12:00 PM** Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Potassium	0.125	0.300	0.100	0	125	70	130			
Sodium	0.0703	0.300	0.100	0	70.3	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

The QC data in batch 65092 applies to the following samples: 1408010-01A, 1408010-02A, 1408010-03A, 1408010-04A, 1408010-05A, 1408010-06A, 1408010-07A, 1408010-08A, 1408010-09A

Sample ID **MB-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **MBLK** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 1:35:00 PM** Prep Date: **8/6/2014**

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

Sample ID **LCS-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCS** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 1:37:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	4.96	0.300	5.00	0	99.2	80	120			

Sample ID **LCSD-65092** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **LCSD** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 1:39:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	4.95	0.300	5.00	0	99.0	80	120	0.185	15	

Sample ID **1408010-01A SD** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **SD** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 1:44:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	56.4	75.0	0	54.3				3.87	10	
Magnesium	<25.0	75.0	0	19.5				0	10	

Sample ID **1408010-01A PDS** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **PDS** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 2:02:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	319	15.0	250	54.3	106	80	120			
Magnesium	304	15.0	250	19.5	114	80	120			

Sample ID **1408010-01A MS** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **MS** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 2:04:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	24.1	15.0	5.00	19.5	91.3	80	120			

Sample ID **1408010-01A MSD** Batch ID: **65092** TestNo: **SW6020A** Units: **mg/L**
SampType: **MSD** Run ID: **ICP-MS4_140814B** Analysis Date: **8/14/2014 2:06:00 PM** Prep Date: **8/6/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Magnesium	23.8	15.0	5.00	19.5	84.8	80	120	1.35	15	

Qualifiers:

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

CLIENT: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: ICP-MS4_140814B

Sample ID **ICV-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **ICV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 10:19:00 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	2.52	0.300	2.50	0	101	90	110			
Magnesium	2.71	0.300	2.50	0	109	90	110			

Sample ID **LCVL-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 10:23:00 AM**	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	0.103	0.300	0.100	0	103	70	130			

Sample ID **CCV4-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 1:27:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.97	0.300	5.00	0	99.5	90	110			
Magnesium	5.13	0.300	5.00	0	103	90	110			

Sample ID **LCVL4-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 1:31:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.104	0.300	0.100	0	104	70	130			
Magnesium	0.107	0.300	0.100	0	107	70	130			

Sample ID **CCV5-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **CCV**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:08:00 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	4.98	0.300	5.00	0	99.6	90	110			
Magnesium	5.15	0.300	5.00	0	103	90	110			

Sample ID **LCVL5-140814**	Batch ID: **R74918**	TestNo: **SW6020A**	Units: **mg/L**
SampType: **LCVL**	Run ID: **ICP-MS4_140814B**	Analysis Date: **8/14/2014 2:14:00 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	0.105	0.300	0.100	0	105	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140801B

The QC data in batch 64986 applies to the following samples: 1408010-01B, 1408010-02B, 1408010-03B, 1408010-04B, 1408010-05B, 1408010-06B, 1408010-07B, 1408010-08B, 1408010-09B, 1408010-10A

Sample ID **MB-64986** Batch ID: **64986** TestNo: **E300** Units: **mg/L**
SampType: **MBLK** Run ID: **IC2_140801B** Analysis Date: **8/1/2014 10:21:06 AM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	<0.300	1.00								
Chloride	<0.300	1.00								
Nitrate-N	<0.100	0.500								
Sulfate	<1.00	3.00								

Sample ID **LCS-64986** Batch ID: **64986** TestNo: **E300** Units: **mg/L**
SampType: **LCS** Run ID: **IC2_140801B** Analysis Date: **8/1/2014 10:35:41 AM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.9	1.00	20.00	0	104	90	110			
Chloride	10.1	1.00	10.00	0	101	90	110			
Nitrate-N	4.89	0.500	5.000	0	97.9	90	110			
Sulfate	30.1	3.00	30.00	0	100	90	110			

Sample ID **LCSD-64986** Batch ID: **64986** TestNo: **E300** Units: **mg/L**
SampType: **LCSD** Run ID: **IC2_140801B** Analysis Date: **8/1/2014 10:50:15 AM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.9	1.00	20.00	0	104	90	110	0.076	20	
Chloride	10.1	1.00	10.00	0	101	90	110	0.372	20	
Nitrate-N	4.92	0.500	5.000	0	98.4	90	110	0.569	20	
Sulfate	30.0	3.00	30.00	0	100	90	110	0.285	20	

Sample ID **1408010-01BMS** Batch ID: **64986** TestNo: **E300** Units: **mg/L**
SampType: **MS** Run ID: **IC2_140801B** Analysis Date: **8/1/2014 4:28:44 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	21.9	1.00	20.00	0	110	90	110			
Chloride	63.7	1.00	20.00	48.38	76.5	90	110			S
Nitrate-N	4.35	0.500	4.516	0	96.4	90	110			
Sulfate	90.9	3.00	20.00	72.69	91.2	90	110			

Sample ID **1408010-01BMSD** Batch ID: **64986** TestNo: **E300** Units: **mg/L**
SampType: **MSD** Run ID: **IC2_140801B** Analysis Date: **8/1/2014 4:43:19 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	21.9	1.00	20.00	0	110	90	110	0.149	20	
Chloride	63.7	1.00	20.00	48.38	76.6	90	110	0.034	20	S
Nitrate-N	4.38	0.500	4.516	0	97.0	90	110	0.611	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140801B

Sample ID **1408010-01BMSD**	Batch ID: **64986**	TestNo: **E300**	Units: **mg/L**		
SampType: **MSD**	Run ID: **IC2_140801B**	Analysis Date: **8/1/2014 4:43:19 PM**	Prep Date: **8/1/2014**		

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sulfate	90.9	3.00	20.00	72.69	90.9	90	110	0.082	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: IC2_140801B

Sample ID **ICV-140801**	Batch ID: **R74680**	TestNo: **E300**	Units: **mg/L**
SampType: **ICV**	Run ID: **IC2_140801B**	Analysis Date: **8/1/2014 10:04:46 AM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	52.0	1.00	50.00	0	104	90	110			
Chloride	24.9	1.00	25.00	0	99.5	90	110			
Nitrate-N	12.3	0.500	12.50	0	98.8	90	110			
Sulfate	74.7	3.00	75.00	0	99.5	90	110			

Sample ID **CCV1-140801**	Batch ID: **R74680**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140801B**	Analysis Date: **8/1/2014 2:14:52 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	20.9	1.00	20.00	0	104	90	110			
Chloride	10.2	1.00	10.00	0	102	90	110			
Nitrate-N	4.91	0.500	5.000	0	98.2	90	110			
Sulfate	30.2	3.00	30.00	0	101	90	110			

Sample ID **CCV2-140801**	Batch ID: **R74680**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140801B**	Analysis Date: **8/1/2014 6:20:54 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	21.0	1.00	20.00	0	105	90	110			
Chloride	10.3	1.00	10.00	0	103	90	110			
Nitrate-N	4.92	0.500	5.000	0	98.4	90	110			
Sulfate	30.8	3.00	30.00	0	103	90	110			

Sample ID **CCV3-140801**	Batch ID: **R74680**	TestNo: **E300**	Units: **mg/L**
SampType: **CCV**	Run ID: **IC2_140801B**	Analysis Date: **8/1/2014 9:01:12 PM**	Prep Date:

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Bromide	21.0	1.00	20.00	0	105	90	110			
Chloride	10.1	1.00	10.00	0	101	90	110			
Nitrate-N	4.95	0.500	5.000	0	98.9	90	110			
Sulfate	30.4	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

The QC data in batch 64992 applies to the following samples: 1408010-01B, 1408010-02B, 1408010-03B, 1408010-04B, 1408010-05B, 1408010-06B, 1408010-07B, 1408010-08B, 1408010-09B, 1408010-10A

Sample ID **MB-64992** Batch ID: **64992** TestNo: **M2320 B** Units: **mg/L @ pH 4.48**
SampType: **MBLK** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 3:27:00 PM** Prep Date: **8/1/2014**

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

Sample ID **LCS-64992** Batch ID: **64992** TestNo: **M2320 B** Units: **mg/L @ pH 4.43**
SampType: **LCS** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 3:31:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Total (As CaCO3)	52.4	20.0	50.00	0	105	74	129			

Sample ID **1407367-11B DUP** Batch ID: **64992** TestNo: **M2320 B** Units: **mg/L @ pH 4.51**
SampType: **DUP** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 4:06:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	201	20.0	0	198.2				1.35	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	201	20.0	0	198.2				1.35	20	

Sample ID **1408010-01B DUP** Batch ID: **64992** TestNo: **M2320 B** Units: **mg/L @ pH 4.5**
SampType: **DUP** Run ID: **TITRATOR_140801B** Analysis Date: **8/1/2014 5:09:00 PM** Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	132	20.0	0	131.7				0	20	
Alkalinity, Carbonate (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0	0				0	20	
Alkalinity, Total (As CaCO3)	132	20.0	0	131.7				0	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: TITRATOR_140801B

Sample ID **ICV-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.19**
SampType: **ICV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 12:17:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	10.2	20.0	0							
Alkalinity, Carbonate (As CaCO3)	91.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	102	20.0	100.0	0	102	98	102			

Sample ID **CCV2-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 2:55:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	20.0	20.0	0							
Alkalinity, Carbonate (As CaCO3)	79.2	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.2	20.0	100.0	0	99.2	90	110			

Sample ID **CCV3-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.48**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 4:25:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	14.7	20.0	0							
Alkalinity, Carbonate (As CaCO3)	84.0	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	98.7	20.0	100.0	0	98.7	90	110			

Sample ID **CCV4-140801**	Batch ID: **R74666**	TestNo: **M2320 B**	Units: **mg/L @ pH 4.49**
SampType: **CCV**	Run ID: **TITRATOR_140801B**	Analysis Date: **8/1/2014 5:14:00 PM**	Prep Date: **8/1/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Alkalinity, Bicarbonate (As CaCO3)	11.5	20.0	0							
Alkalinity, Carbonate (As CaCO3)	87.8	20.0	0							
Alkalinity, Hydroxide (As CaCO3)	<10.0	20.0	0							
Alkalinity, Total (As CaCO3)	99.4	20.0	100.0	0	99.4	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: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

ANALYTICAL QC SUMMARY REPORT

RunID: WC_140805D

The QC data in batch 65087 applies to the following samples: 1408010-01B, 1408010-02B, 1408010-03B, 1408010-04B, 1408010-05B, 1408010-06B, 1408010-07B, 1408010-08B, 1408010-09B, 1408010-10A

Sample ID	**MB-65087**	Batch ID:	**65087**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**MBLK**	Run ID:	**WC_140805D**	Analysis Date:	**8/6/2014 10:06:00 PM**	Prep Date:	**8/5/2014**

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

Sample ID	**LCS-65087**	Batch ID:	**65087**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**LCS**	Run ID:	**WC_140805D**	Analysis Date:	**8/6/2014 10:06:00 PM**	Prep Date:	**8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	749	10.0	745.6	0	100	90	113			

Sample ID	**1408010-01B-DUP**	Batch ID:	**65087**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_140805D**	Analysis Date:	**8/6/2014 10:06:00 PM**	Prep Date:	**8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	327	10.0	0	327.0				0	5	

Sample ID	**1408010-10A-DUP**	Batch ID:	**65087**	TestNo:	**M2540C**	Units:	**mg/L**
SampType:	**DUP**	Run ID:	**WC_140805D**	Analysis Date:	**8/6/2014 10:06:00 PM**	Prep Date:	**8/5/2014**

Analyte	Result	RL	SPK value	Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Total Dissolved Solids (Residue, Filtera	7260	200	0	7300				0.549	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

CLIENT: TRC Environmental Corp.
Work Order: 1408010
Project: RRC-Ballinger

MQL SUMMARY REPORT

TestNo: E300	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Bromide	0.300	1.00
Chloride	0.300	1.00
Nitrate-N	0.100	0.500
Nitrite-N	0.100	0.500
Sulfate	1.00	3.00

TestNo: M2320 B	**MDL**	**MQL**
Analyte	**g/L @ pH 4.4**	**g/L @ pH 4.4**
Alkalinity, Bicarbonate (As CaCO3)	10.0	20.0
Alkalinity, Carbonate (As CaCO3)	10.0	20.0
Alkalinity, Hydroxide (As CaCO3)	10.0	20.0
Alkalinity, Total (As CaCO3)	20.0	20.0

TestNo: SW6020A	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Calcium	0.100	0.300
Magnesium	0.100	0.300
Potassium	0.100	0.300
Sodium	0.100	0.300

TestNo: M2540C	**MDL**	**MQL**
Analyte	**mg/L**	**mg/L**
Total Dissolved Solids (Residue, Filt	10.0	10.0

Qualifiers: MQL -Method Quantitation Limit as defined by TRRP
MDL -Method Detection Limit as defined by TRRP

ATTACHMENT 3

Analytical Data Review/Data Validation Checklist

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QA Data Evaluation Results
RRC – Ballinger Seep

July 2014 Analytical Data

Background

Water samples were collected from July 29 through July 31, 2014. The samples were submitted to DHL Analytical in Round Rock, Texas for analysis. Results for the following methods are reported:

- Anions (Bromide, Chloride, Nitrate, and Sulfate) by EPA Method 300.0
- Alkalinity (Carbonate, Bicarbonate, Hydroxide, and Total) by Standard Methods 2320B.
- Cations (Calcium, Magnesium, Potassium, and Sodium) by SW-846 Method 6020A
- Total Dissolved Solids (TDS) by Standard Methods 2540C

TRC quality assurance (QA) staff performed a review of quality control (QC) data associated with the samples to ensure that the reported analytical results are valid, accurate, and sufficient to meet quality objectives. Data were reviewed for compliance with the requirements given in *Investigation and Mitigation of Produced Water Contamination into the Upper Colorado River Basin Downstream of E. V. Spence Reservoir (Segment 1426) Ballinger Seep/Wendkirk Oil Field Quality Assurance Project Plan* (QAPP: Railroad Commission of Texas, Oil and Gas Division, Site Remediation Section, July 11, 2014). In order to ensure that the analytical methodologies are capable of achieving the data quality objectives (DQOs), measurement performance criteria were set for the analytical measurements in terms of accuracy, precision, representativeness, completeness, sensitivity, and comparability. The measurement performance criteria were established for each parameter reviewed during the data evaluation process and included sample integrity, blank analyses, spike recoveries, duplicate precision and limits of quantitation (LOQs or reporting limits [RLs]). Samples reviewed to prepare this evaluation are presented in Table 1.

The following is a discussion of the QC analyses performed with the site samples and any potential data limitations associated with the results of these analyses.

Sample Integrity

All samples were adequately preserved, received with an acceptable cooler temperature, and analyzed within method-defined holding times.

Blank Analyses

Target analytes were not detected in the method blanks associated with Ballinger samples indicating that laboratory contamination did not impact analytical results.

Spike Recoveries

All reported LCS recoveries fall within QAPP-specified QC limits. These results are indicative of adequate laboratory measurement control in the absence of potential matrix interferences at the time of sample analyses.

Matrix spike/matrix spike duplicate (MS/MSD) analyses were performed on samples MW-13 and CR-2500 Down for calcium, magnesium, sodium, potassium, bromide, chloride, nitrate, and sulfate.

Recoveries were outside of the acceptance limits for calcium, magnesium, and sodium in the MS/MSD analyses performed on sample MW-13. Because the concentrations of these cations in the unspiked sample were greater than 4x the concentration spiked, the low recoveries cannot be used to evaluate potential matrix effects. A review of the post digestion spike (PDS) showed the recoveries were within the acceptance limits.

The recovery of calcium (70%) was slightly below the acceptance limits in the MS analysis performed on sample CR-2500 Down; however, the recovery of calcium in the MSD was within the acceptance limits. Because the concentration of calcium in the unspiked sample was greater than 4x the concentration spiked, the low recovery cannot be used to evaluate potential matrix effects.

Recoveries were outside of the acceptance limits for chloride (76.5%/76.6%) in the MS/MSD analyses performed on sample CR-2500 Down. Potential low bias exists for the chloride results in all Ballinger surface water samples. Since chloride was detected at concentrations above the Ambient Water Reporting Limit (AWRL) in all surface water samples, the potential low bias did not have an adverse effect on the usability of the data.

Duplicate Precision

The precision of duplicate samples is calculated by relative percent difference (RPD) using the following equation:

$$RPD = \left| \frac{(Amount\ in\ Sample 1 - Amount\ in\ Sample 2)}{0.5\,(Amount\ in\ Sample 1 + Amount\ in\ Sample 2)} x\,100 \right|$$

RPDs for LCS/LCSD pairs are within the acceptance limits indicating that the laboratory achieved adequate precision in the absence of potential matrix interferences at the time of sample analysis.

RPD values associated with MS/MSD analyses are within the acceptance limits indicating that the sample matrix has minimal impact, if any, on analytical precision.

Field split RPDs must be <30 for site samples. These criteria apply only if the sample and/or split results are >5x the LOQ; if both results are <5x the LOQ, the criterion will be doubled.

Sample DUP-1 was collected as a field split of sample MW-14. Sample DUP-2 was collected as a field split of sample MW-13. Sample DUP-3 was collected as a field split of sample CR-1500 Down. Calculated RPD values for detected analytes in these analyses are presented in Table 2. Adequate precision is exhibited for all detected analytes and data interpretation issues are not indicated.

To test the precision of the laboratory measurements, the laboratory also performed laboratory duplicate (laboratory replicate) analyses of samples MW-2, MW-13 and CR-2500 Down for alkalinity and samples MW-13, MW-15, MW-17 and CR-2500 Down for total dissolved solids (TDS). All RPD values were within the acceptance limits.

LOQs

The LOQs required in the QAPP were achieved for all samples prior to the application of dilution factors. In many cases, the elevated LOQs (after dilution) did not have an impact on the usability of the data because the associated analyte was detected. However, several analytes were reported as nondetects with elevated LOQs due to the dilutions. Due to the elevated concentrations of chloride, all groundwater samples except sample MW-17 were analyzed at a 10-fold dilution for nitrate; sample MW-17 was analyzed at a 100-fold dilution for nitrate. Bromide was also analyzed at a 10-fold dilution in sample MW-15. Because a groundwater AWRL does not exist for nitrate and bromide, there was no adverse effect on the usability of the data.

Conclusions

QC data associated with laboratory measurements indicate that data are defensible and that measurement data reliability is generally within expected limits of sampling and analytical error. None of the listed issues have an adverse effect on the usability of the data or the decision-making process.

Table 1. Evaluated Samples

TRC Sample ID	Collected	Matrix	DHL Sample ID
MW-17	07/29/2014	Groundwater	1407342-01
MW-5	07/29/2014	Groundwater	1407342-02
MW-16	07/30/2014	Groundwater	1407367-01
MW-14	07/30/2014	Groundwater	1407367-02
DUP-1	07/30/2014	Groundwater	1407367-03
MW-8	07/30/2014	Groundwater	1407367-04
MW-7	07/30/2014	Groundwater	1407367-05
MW-3	07/30/2014	Groundwater	1407367-06
MW-2	07/30/2014	Groundwater	1407367-07
MW-1	07/30/2014	Groundwater	1407367-08
MW-4	07/30/2014	Groundwater	1407367-09
MW-9	07/30/2014	Groundwater	1407367-10
MW-13	07/30/2014	Groundwater	1407367-11
DUP-2	07/30/2014	Groundwater	1407367-12
MW-12	07/30/2014	Groundwater	1407367-13
MW-15	07/30/2014	Groundwater	1407367-14
CR-2500 Down	07/31/2014	Surface water	1408010-01
CR-1500 Down	07/31/2014	Surface water	1408010-02
CR-900 Down	07/31/2014	Surface water	1408010-03
CR-500 Down	07/31/2014	Surface water	1408010-04
CR-50 Down	07/31/2014	Surface water	1408010-05
CR-50 Up	07/31/2014	Surface water	1408010-06
CR-250 Up	07/31/2014	Surface water	1408010-07
CR-1000 Up	07/31/2014	Surface water	1408010-08
DUP-3	07/31/2014	Surface water	1408010-09
MW-15	07/31/2014	Groundwater	1408010-10

Table 2. Calculated RPD Values for Field Split Analyses

Parent/Duplicate Sample IDs	Analyte	Parent Sample Result	Duplicate Sample Result	Units	RPD	Flag
MW-14 / DUP-1	Calcium	2220	1820	mg/L	19.80	
	Magnesium	1780	1740	mg/L	2.27	
	Potassium	21.4	20.8	mg/L	2.84	
	Sodium	3280	3180	mg/L	3.10	
	Bromide	70.6	69.8	mg/L	1.14	
	Chloride	9090	9180	mg/L	0.99	
	Nitrate	<1.00	<1.00	mg/L	0	
	Nitrite	<1.00	<1.00	mg/L	0	
	Sulfate	2780	2740	mg/L	1.45	
	Bicarbonate Alkalinity	444	447	mg/L	0.67	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	444	447	mg/L	0.67	
	TDS	25,400	20,800	mg/L	19.91	
MW-13 / DUP-2	Calcium	357	391	mg/L	9.09	
	Magnesium	279	284	mg/L	1.78	
	Potassium	9.40	9.65	mg/L	2.62	
	Sodium	856	878	mg/L	2.54	
	Bromide	<3.00	<3.00	mg/L	0	
	Chloride	1140	1160	mg/L	1.74	
	Nitrate	<1.00	<1.00	mg/L	0	
	Nitrite	<1.00	<1.00	mg/L	0	
	Sulfate	2020	2080	mg/L	2.93	
	Bicarbonate Alkalinity	198	200	mg/L	1.01	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	198	200	mg/L	1.01	
	TDS	4670	4680	mg/L	0.21	
CR-1500 Down / DUP-3	Calcium	52.3	53.7	mg/L	2.64	
	Magnesium	21.3	21.1	mg/L	0.94	
	Potassium	6.95	7.13	mg/L	2.56	
	Sodium	33.9	34.3	mg/L	1.17	
	Bromide	<0.300	<0.300	mg/L	00	
	Chloride	56.1	56.9	mg/L	1.42	
	Nitrate	<0.100	<0.100	mg/L	0	
	Nitrite	<0.100	<0.100	mg/L	0	
	Sulfate	80.2	80.3	mg/L	0.12	
	Bicarbonate Alkalinity	135	134	mg/L	0.74	
	Carbonate Alkalinity	<10.0	<10.0	mg/L	0	
	Hydroxide Alkalinity	<10.0	<10.0	mg/L	0	
	Total Alkalinity	135	134	mg/L	0.74	
	TDS	387	396	mg/L	2.30	

Table D2.1: Data Validation Checklist				
Client/Project: RRC/Ballinger Seep		**Reviewer: Hales/Denly**		**Review Date: 08/27/14**
Laboratory: DHL Analytical Work Order No.:1407342, 1407367, 1408010		**Analytical Method:6020A, E300, M2320B, M2540C**		**Matrix: Aqueous**
#	**Review Item or Question**	**Yes**	**No**	**Comments (List Exceptions, Explanations, *etc.*)**
Sample Preservation and Integrity				
1	Did samples arrive at the laboratory appropriately preserved (*e.g.*, 4°C, correct acid added to sample)?	X		
2	Were holding times met?	X		
Data Completeness				
3	Are results reported for all target analytes, with no additional analytes?	X		
4	Was the requested analytical method followed?	X		
5	Do reported detection limits (or LOQs/MDLs) agree with the project specifications (QAPP)?		X	See QA Data Evaluation Results document for details regarding the LOQs and MDLs.
6	Are results reported for all samples submitted for analysis?	X		
Calibration and QC Sample Frequency				
7	Were initial and continuing instrument calibration analyses performed? And reported? [a]	X		
8	For each analytical batch, are results provided for a method blank?	X		
9	For each analytical batch, are results provided for an LCS/LCSD pair?	X		
10	For each analytical/preparation batch, are results provided for an MS/MSD pair? Alternately, are results for MS/MSD pairs provided for every 20 field samples analyzed?	X		

Table D2.1: Data Validation Checklist

Client/Project: RRC/Ballinger Seep	Reviewer: Hales/Denly	Review Date: 08/27/14
Laboratory: DHL Analytical Work Order No.:1407342, 1407367, 1408010	Analytical Method:6020A, E300, M2320B, M2540C	Matrix: Aqueous

#	Review Item or Question	Yes	No	Comments (List Exceptions, Explanations, *etc.*)
11	Are field split results provided at the project-specified (QAPP) frequency?	X		
12	Organic Analyses Only: For each sample (field and QC), are surrogate spike results provided?			NA
QC Results				
13	Do method blank results show **no** detectable concentrations of target analytes (*i.e.*, results = ND)?	X		
14	Are LCS/LCSD recoveries and RPDs within limits?	X		
15	Are MS/MSD recoveries and RPDs within limits?		X	See QA Data Evaluation Results document for details regarding the MS/MSD and RPDs.
16	Are surrogate recoveries within limits (organic analyses only)?			NA
Other Data Quality-Related Issues				
17	The laboratory did not issue any CARs. If this is not true (a CAR was issued), describe impact on sample results.	X		
18	The analyst did not describe any analytical anomalies. If this is not true, describe potential impact to sample results.	X		
19	No other potential data quality issues were identified. If this is not true, describe issues.		X	A Case Narrative was submitted with each data package. The Case Narrative details items from the Laboratory Review Checklist Exception Report.

Table D2.1: Data Validation Checklist				
Client/Project: RRC/Ballinger Seep		**Reviewer: Hales/Denly**		**Review Date: 08/27/14**
Laboratory: DHL Analytical **Work Order No.:1407342, 1407367, 1408010**		**Analytical Method:6020A, E300, M2320B, M2540C**		**Matrix: Aqueous**
#	**Review Item or Question**	**Yes**	**No**	**Comments (List Exceptions, Explanations, *etc.*)**

[a] The laboratory will not be required to report all calibration results. Data validation efforts for this project will assume that the laboratory performed the method-specified calibration analyses.

CAR = Corrective Action Report

LCS/LCSD = Laboratory Control Sample/Duplicate Laboratory Control Sample

MS/MSD = Matrix Spike/Matrix Spike Duplicate

QAPP = Quality Assurance Project Plan

RPD = Relative Percent Difference

Further Comments: