JANUARY 2016

2015 Basewide Groundwater Monitoring Report

Sites SS-34, WP-44, DP-60, and Base Boundary Monitoring Wells

JBLM McChord Field, Washington

Department of the Army
Corps of Engineers, Seattle District
4735 East Marginal Way South
Seattle, Washington 98134-2329

CONTRACT NO. W912DW-11-D-1031
TASK ORDER NO. 0001

2015 BASEWIDE GROUNDWATER MONITORING REPORT

JANUARY 2016

SITES SS-34, WP-44, DP-60, AND
BASE BOUNDARY MONITORING WELLS

JBLM McCHORD FIELD, WASHINGTON

DCN: TTEC-BTL-1031-003-16-001

Prepared for:
U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT

AND
PUBLIC WORKS – ENVIRONMENTAL DIVISION
JOINT BASE LEWIS-McCHORD, WASHINGTON

Prepared by:

TETRA TECH EC, INC.

A SUBCONTRACTOR TO
SEALASKA ENVIRONMENTAL SERVICES, LLC
POULSBO, WASHINGTON

CONTENTS

Section **Page**

1. INTRODUCTION 1-1
1.1 SITE SS-34 1-1
1.2 SITE WP-44 1-2
1.3 SITE DP-60 1-2
1.4 BASE BOUNDARY RESOURCE PROTECTION WELLS 1-4

2. FIELD ACTIVITIES 2-1
2.1 INVESTIGATION-DERIVED WASTE 2-2
2.2 DEVIATIONS FROM THE 2015 QUALITY PROJECT PLAN 2-2

3. RESULTS 3-1
3.1 SITE SS-34 3-1
3.2 SITE WP-44 3-1
3.3 SITE DP-60 3-2
3.4 BASE BOUNDARY RESOURCE PROTECTION WELLS 3-2

4. ANALYSIS OF DATA AND DISCUSSION 4-1
4.1 SUMMARY STATISTICS OF BTEX AND TPH CONCENTRATIONS 4-1
4.2 SHAPIRO-WILK TEST FOR NORMALITY 4-1
4.3 LINEAR REGRESSION AND MANN-KENDALL TREND ANALYSES 4-2

5. CONCLUSIONS AND RECOMMENDATIONS 5-1
5.1 CONCLUSIONS 5-1
5.2 RECOMMENDATIONS 5-1

6. REFERENCES 6-1

APPENDICES

Appendix A. McChord Field Resource Protection Well Inventory

Appendix B. Field Documentation

Appendix C. Laboratory Reports

Appendix D. Historical Data and Linear Graphs

Appendix E. Statistics Graphs

TABLES

Table 1. Resource Protection Well Construction Details

Table 2. Sampling Summary

Table 3. Depth-to-Water and Water Quality Parameter Measurements – 2015

Table 4. Constituents of Concern Concentrations – 2015

Table 5. Descriptive Statistics

Table 6. Test for Normality and Linear Regression Trends

Table 7. Mann-Kendall Test on Non-Parametric Data

FIGURES

Figure 1. Joint Base Lewis-McChord Location Map

Figure 2. JBLM McChord Field, Sites SS-34, WP-44, DP-60, and Base Boundary Monitoring Locations – 2015

Figure 3. JBLM McChord Field, Sites SS-34, WP-44, DP-60, and Base Boundary Groundwater Elevation Contours – 2015

ABBREVIATIONS AND ACRONYMS

µg/L	micrograms per liter
BTEX	benzene, toluene, ethylbenzene, and xylenes
CY	calendar year
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
IRP	Installation Restoration Program
JBLM	Joint Base Lewis-McChord
MTCA	Model Toxics Control Act
ND	non-detect
NFRAP	No Further Response Action Planned
NPL	National Priorities List
QPP	Quality Project Plan
RA-O	Remedial Action and Operation
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons – diesel range
TPH-G	total petroleum hydrocarbons – gasoline range
TPH-O	total petroleum hydrocarbons – heavy oil range
VOC	volatile organic compound
WTA	Washrack Treatment Area

This page intentionally left blank.

1. INTRODUCTION

This groundwater monitoring report was prepared for Joint Base Lewis-McChord (JBLM) Public Works, JBLM, Washington (Figure 1) by Tetra Tech. All groundwater monitoring and analysis was completed by Tetra Tech and ALS, in accordance with the 2015 Quality Project Plan (QPP) (TtEC 2015). This report documents field activities conducted in 2015 for Remedial Action and Operation (RA-O) of groundwater monitoring at two Consent Decree sites, one No Further Response Action Planned (NFRAP) site and base boundary monitoring at JBLM McChord Field (Figure 2 shows monitoring locations, Figure 3 shows groundwater elevations). The following four sites or areas are addressed in this report:

- Site SS-34, an active bulk fuel storage area
- Site WP-44, an active motor pool
- Site DP-60, a former wash rack, oil water separator, and storm water infiltration ditches
- Base boundary resource protection wells

1.1 SITE SS-34

Site SS-34 is in the northwestern portion of JBLM McChord Field, east of the main gate. The site is associated with the JP-4 (now JP-8) bulk fuel storage area. Monitoring of the site began in the mid-1980s and currently continues on an annual basis. In general, detections of compounds above Model Toxics Control Act (MTCA) Method A cleanup levels have been reported at SS-34 and are related to total petroleum hydrocarbons (TPH); benzene, toluene, ethylbenzene, and xylenes (BTEX); gasoline range (C_7–C_{12}) TPH (TPH-G); and diesel range (C_{12}–C_{24}) TPH (TPH-D).

The Air Force chose intrinsic bioremediation (or natural attenuation) and long-term monitoring as the appropriate remedial action for Site SS-34. Evaluation of natural attenuation parameters from groundwater samples collected beginning in calendar year (CY) 1995 show evidence that the fuel contamination at the site is actively being degraded by naturally occurring bacteria. The Air Force incorporated the site into the Basewide Groundwater Monitoring and Natural Attenuation Monitoring Program in fall 1995.

Construction activities associated with expansion of the bulk fuels storage that began in late CY 2004 (after the September 2004 sampling event) required the decommissioning of resource protection well DM-04. Wells DM-06 and UA-02 have been utilized for sampling of the site since March 2005, since they are the two resource protection wells nearest to the former location of well DM-04. Well DM-04 was approximately 250 feet southeast of well AZ-06, and

approximately midway between well AZ-06 and well DM-06. Well UA-02 is approximately 250 feet west of the former location of well DM-04.

Site SS-34 is currently on Washington State Department of Ecology (Ecology) Hazardous Sites List (February 23, 2005) with a ranking of 3 (medium level of concern on scale of 1 to 5) and the status is listed as construction completed, operations and maintenance underway.

The remedial action objective (RAO) for the site is the continued natural attenuation of TPH concentrations until two consecutive rounds of sampling events indicate that the levels of contamination are below Ecology MTCA Method A cleanup levels (Air Force 1996).

1.2 SITE WP-44

Site WP-44 encompasses the Transportation Area (motor pool) at JBLM McChord Field. Monitoring of the site began in CY 1993 and currently continues on an annual basis. In general, detections of compounds exceeding MTCA Method A cleanup levels have been reported at the site and are related to BTEX, TPH-G, and TPH-D.

The Air Force chose intrinsic bioremediation (or natural attenuation) and long-term monitoring as the appropriate remedial action for Site WP-44 (Air Force 1996). A study completed in CY 1995 found evidence that the fuel contamination at the site was actively being degraded by naturally occurring bacteria (FWENC 1995). The Air Force incorporated the site into the Basewide Groundwater Monitoring and Natural Attenuation Monitoring Program in fall 1995.

In CY 1999, the Air Force demolished some of the older "temporary" buildings at the Transportation Area prior to re-paving the area. In fall 1999, during demolition of Building 762, a brick and mortar drywell was discovered beneath the foundation. Soils beneath the drywell were found to contain TPH and considered to be a potential source for the TPH contamination detected in the groundwater beneath the site.

In February 2000, the Air Force excavated and recycled approximately 427 tons of TPH-contaminated soil associated with the inactive drywell. Clean borrow material from a non-industrial portion of JBLM McChord Field was used to backfill the excavation prior to paving.

Since CY 2001, the Air Force and JBLM Public Works have measured static water levels and performed semiannual sampling at the two site resource protection wells. Beginning in CY 2010, groundwater monitoring at the site was reduced from semiannual to annual.

1.3 SITE DP-60

Site DP-60 encompasses the area defined by CH2M HILL (1982) as a former washrack (now inactive), two leach pits (now backfilled), an oil/water separator (skimmer), and Installation Restoration Program (IRP) Site DP-60, which includes storm drainage infiltration ditches

(now backfilled), and a thin layer of floating fuel. This area is referred to as the Washrack/ Treatment Area (WTA) and was listed on the National Priorities List (NPL) in 1987.

The WTA is within the northern industrial portion of JBLM McChord Field, west of the instrument runway, and is within the industrial and operational activity areas associated with aircraft maintenance and flight operation. Formerly, aircraft were washed and drained of fuel at the WTA. The site encompasses a grassy area between C Ramp and D Ramp and includes a number of buildings.

The Air Force conducted a Remedial Investigation (RI)/Feasibility Study (FS) (Ebasco Environmental 1992a) at the sites, and a Record of Decision (ROD) (Ebasco Environmental 1992b) was signed in 1992. Based on the pilot test conducted during the Remedial Design (RD), it was determined there was insufficient fuel to make fuel recovery feasible based on 19 test pits, 10 observation sumps, and 1 test trench adjacent to resource protection well CR-02. In an Explanation of Significant Differences (ESD), prepared and released to the public in 1994 to document the changes made to the remedial action selected in the ROD after the pilot test, natural attenuation and monitoring were presented as the most cost-effective methods of treating the fuel contamination. Ecology and the U.S. Environmental Protection Agency (EPA) concurred with the ESD, and the Air Force placed wells associated with the WTA into the Basewide Long-Term Monitoring Program in 1994.

In March 1995, EPA prepared a memorandum to incorporate a non-significant change to the ROD regarding this site—inclusion on the construction completion list—stating that "future response at this site does not require physical construction."

In June 1995, EPA accepted the Air Force's Final Remedial Action Report for the WTA (Air Force 1995), agreeing with the Air Force that semiannual sampling of resource protection wells CR-02 and TW-9 for BTEX, TPH, and lead was appropriate to track the progress of natural attenuation. Ecology was concerned about the presence of inorganic compounds at concentrations above MTCA cleanup levels. Cadmium, chromium, copper, and lead were monitored downgradient from and adjacent to Site SD-54 (historical leach pits) to provide early warning of potential exceedances of the regulatory cleanup levels.

In October 1995, EPA began the process to remove the WTA from the NPL. A Notice of Intent to Delete Sites SD-54 and DP-60 within the WTA from the NPL was published in the Federal Register on July 22, 1996. The deletion process was completed on September 26, 1996, when the Notice of Deletion was published in the Federal Register. The Air Force, in consultation with Ecology, reduced the sampling to annual frequency in resource protection wells CR-02 and TW-9. The reason for the reduction was based on the historical contaminant trend and the recommendations in the CY 1997 Annual Report (URSG and FWENC 1998). In September 1999, the Five-Year Review for the WTA was completed and signed by EPA and the Air Force.

In September 2004 the Air Force, EPA, and Ecology completed the second Five-Year Review of the WTA (Air Force 2004). The report recommended eliminating sampling associated with Site SD-54 and reducing sampling at Site DP-60 for TPH-diesel compounds, only, until the RAO of 1,000 micrograms per liter (µg/L) has been achieved.

1.4 BASE BOUNDARY RESOURCE PROTECTION WELLS

During CY 1994, the Air Force initiated long-term monitoring at the base boundary. The nine base boundary resource protection wells (CW-04, LT-2 through LT-7, LT-10, and LT-11) were installed to monitor the quality of shallow groundwater exiting the base along the western and northern boundaries. Currently, three of the nine wells are sampled annually on a rotating basis and indirectly monitor a number of NFRAP sites that are located in the northern and western parts of JBLM McChord Field. Most of these sites are near or under the existing runway, taxiway, or parking ramps. Sites in the northern and western portions of JBLM McChord Field are indirectly monitored by the base boundary wells. There have been no detections of volatile organic compounds (VOCs) above MTCA Method A cleanup levels during the CY 1994 through CY 2015 sampling events. Concentrations of total metals and dissolved metals reported in samples collected in CY 1994 and CY 1995 were within the background range for JBLM McChord Field.

Because of the increased mobility of VOCs in comparison to other chemical compounds, VOCs would likely be the first chemical compounds detected if contaminated groundwater begins to move off base. Using this rationale, the Air Force decided that sampling for VOCs would provide sufficient monitoring at the base boundary to detect unanticipated releases, an approach that also conserves environmental funds.

2. FIELD ACTIVITIES

JBLM IRP contractor Tetra Tech conducted sampling at sites SS-34 and WP-44 and the base boundary on 26 March and at site DP-60 on 24 June. During each monitoring event, an electronic water level indicator was used to measure depth-to-water in all resource protection wells scheduled for static water level measurements to the nearest 0.01 foot from the top of the well's PVC casing. Well construction details are presented in Table 1. Well construction details for all resource protection wells currently active on JBLM McChord Field are presented in Appendix A. A summary of the 2015 sampling program for Sites SS-34, WP-44, DP-60 and base boundary monitoring is presented in Table 2.

Resource protection wells were purged using standard low-flow purging procedures prior to sampling. A stainless steel Grundfos pump was used to purge water from the resource protection wells. The pump was decontaminated using a Liquinox® and tap water solution between each well. A variable frequency drive controller was used to limit the purging flow rate to less than one liter per minute. During purging, relative water levels were monitored with an electronic water level indicator. Water quality parameters such as pH, temperature, and turbidity were measured with a calibrated Horiba U-22 meter to verify stabilization. The Horiba was calibrated at the beginning of each day prior to sampling activities. Groundwater samples were collected immediately after field measurements had stabilized without turning off the pumping system. Depth-to-water and water quality parameter measurements during 2015 are presented in Table 3.

Groundwater samples collected from resource protection wells at sites SS-34 and WP-44 were analyzed for TPH-G using Ecology Method NWTPH-Gx, TPH-D and TPH-heavy oil range (TPH-O) using Ecology Method NWTPH-Dx, and BTEX using EPA Method 8260C. Groundwater samples collected from resource protection wells at site DP-60 were analyzed for TPH-D and TPH-O. Base boundary samples were analyzed for VOCs using EPA Method 8260C. Results are presented in Table 4.

Groundwater samples were shipped overnight to ALS in Kelso, Washington. Samples were received by the lab under proper chain-of-custody for analysis per the project sample and analysis plan. Field documentation is included in Appendix B. Copies of laboratory analytical reports are included in Appendix C.

2.1 INVESTIGATION-DERIVED WASTE

Investigation-derived waste was disposed of as follows:

- Purge water and decontamination water was collected in a 15-gallon poly drum, transported to building 731 on McChord Field and discharged to an oil water separator on-site.
- Personal protective equipment and garbage were disposed of in a JBLM dumpster as part of the normal JBLM solid waste stream.

2.2 DEVIATIONS FROM THE 2015 QUALITY PROJECT PLAN

Groundwater monitoring events were completed in accordance with the CY 2015 QPP (TtEC 2015). There were no deviations from the plan.

3. RESULTS

This section presents analytical results from samples collected in 2015. Results are presented in Table 4. Historical data tables and linear graphs for each site are presented in Appendix D.

3.1 SITE SS-34

Historically, BTEX compounds have been detected below their respective MTCA Method A cleanup levels of 5 µg/L, 1,000 µg/L, 700 µg/L, and 1,000 µg/L in samples collected from resource protection wells at site SS-34. No BTEX constituents above MTCA Method A cleanup levels were detected in any samples collected from SS-34 resource protection wells during CY 2015 (Table 4).

Historically, TPH-G, TPH-D, and TPH-O have been detected above their respective MTCA Method A cleanup levels of 1,000 µg/L (TPH-G) and 500 µg/L (TPH-D and TPH-O) in samples collected from resource protection well AZ-06 (Appendix D). TPH-G has been detected ranging from 200 µg/L (March 2006) to 20,000 µg/L (September 1995) and TPH-D has been detected in samples collected from AZ-06 ranging from 820 µg/L (March 2006) to 160,000 µg/L (September 2005). TPH-G, TPH-D, and TPH-O are generally detected at very low levels or not at all in samples collected from resource protection wells DM-06 and UA-02. TPH was not detected above MTCA Method A cleanup levels in any wells sampled at SS-34 in CY 2015.

3.2 SITE WP-44

No BTEX constituents were detected above the MTCA Method A cleanup levels in samples collected from resource protection wells CW-9 and CW-14b during CY 2015 (Table 4).

Historically TPH-G and TPH-D have been detected above their respective MTCA cleanup levels in samples collected from resource protection well CW-9 (Appendix D). TPH-G is generally detected at low levels in samples collected from resource protection well CW-14b. TPH-D concentrations range from non-detect (September 1997) to 6,800 µg/L (March 2004) and TPH-O ranges from non-detect (multiple) to 1,500 µg/L (March 2006).

There were no detections of TPH above MTCA Method A cleanup levels in the sample from resource protection well CW-9 during CY 2015. The reported TPH-D concentration from resource protection well CW-9 (2,700 µg/L) was above the MTCA Method A cleanup level. TPH-O was also reported above MTCA Method A at 520 µg/L in well CW-14b during CY 2015.

3.3 SITE DP-60

Analyzing samples collected at site DP-60 for BTEX and TPH-G was discontinued after the March 2006 sampling event. Site DP-60 has a site-specific cleanup level for TPH-D at 1,000 µg/L. The cleanup level for TPH-O is 500 µg/L

TPH-D and TPH-O were detected at 1,900 µg/L and 470 µg/L, respectively, in the sample collected from CR-02. TPH-D and TPH-O were detected at 970 µg/L and 570 µg/L in the sample collected from TW-9. Concentrations in CR-02 were higher in CY 2015 than in CY 2014, but within an order of magnitude. Concentrations in TW-9 were lower in CY 2015 than in CY 2014, but also within an order of magnitude.

3.4 BASE BOUNDARY RESOURCE PROTECTION WELLS

No VOCs were detected in samples collected from resource protection wells CW-4, LT-4 and/or LT-6 in CY 2015.

4. ANALYSIS OF DATA AND DISCUSSION

Data were analyzed to help support interpretation and evaluation of constituent concentrations detected in groundwater at sites SS-34, WP-44, and DP-60. Data from base boundary resource protection wells were not analyzed due to the infrequent detection of any VOCs in groundwater samples collected from these wells. Linear graphs of constituent concentration data from resource protection wells sampled at the three TPH sites are presented in Appendix D.

The Shapiro-Wilk test for normality, linear regression analysis, and Mann-Kendall test for trend were performed on the data using a Microsoft Excel® add in, Analyse It®. The Mann-Kendall test was performed on non-parametric data.

All concentration measurements not known to be in error were considered valid. Suspect "outliers" were not removed from the data set and were included in the graphs. Non-detect (ND) data, which represent concentration measurements below the analytical reporting limits, were evaluated at the reporting limit value (i.e., if the reporting limit was below 0.5 µg/L then the concentration value was set at 0.5 µg/L).

4.1 SUMMARY STATISTICS OF BTEX AND TPH CONCENTRATIONS

Summary statistical analysis was performed on data from resource protection wells with a minimum of eight data points. Summary statistics were calculated using Microsoft Excel's Descriptive Statistics® tool. Table 5 presents summary descriptive statistics of constituent concentration data for each resource protection well associated with sites SS-34, WP-44, and DP-60.

4.2 SHAPIRO-WILK TEST FOR NORMALITY

Prior to analyzing BTEX and TPH concentration data for trends, data were tested for normal distribution. The null and alternate hypotheses are a summary of a test's objectives, which in this case is to test for the data's distribution. The null hypothesis is what is assumed to be true before given evidence that it may be false. The null hypothesis of all tests for normality is that a dataset is normally distributed. The alternate hypothesis, then, is that a dataset is not normally distributed (Helsel and Hirsch 2002). A significance level, or alpha level, of 0.05 was used when determining whether historical data from resource protection wells were normally distributed or not. P values, generated using the Shapiro-Wilk Test for Normality, were then compared to the alpha level. The alpha level is the "cutoff" point for the test statistic in making a decision whether the data are normally distributed or not. P values show the strength of the test in determining whether the data are normally distributed or not. P values range from 0 to 1; the closer a P value is to 1, the better the dataset is normally distributed. P values equal to or below 0.05 (alpha level) are not considered normally distributed.

Datasets that were not considered normally distributed were then transformed by taking the natural log of the original values. This is generally the most common transformation of water resources data. The Shapiro-Wilk Test for Normality was run on the transformed data with the same criteria as the datasets above. Results of the Shapiro-Wilk test are included in Table 6. Histograms are included in Appendix E.

4.3 LINEAR REGRESSION AND MANN-KENDALL TREND ANALYSES

Linear regression trend analyses were conducted on data that were found to be normally or log normally distributed. In this instance, the null hypothesis for the test is that there is no trend in the data (Helsel and Hirsch 2002). The alpha level for the linear regression analysis was set at 0.05. P values generated by the analysis were then compared to the alpha level. P values less than the alpha value suggested a trend in the data. Results are presented in Table 6. Linear regression graphs are presented in Appendix E.

The Mann-Kendall test for trend was performed on data that were not normally or log-normally distributed (non-parametric data). No assumptions need to be made about the distribution of the data in order to perform the Mann-Kendall test (Helsel and Hirsch 2002). The null hypothesis is the same as the linear regression test above in that there is no trend in the data. The alpha level was kept the same at 0.05 although the Mann-Kendall test computes a P value for a two-tailed prediction interval. The null hypothesis was rejected for P values smaller than 0.05 or larger than 0.95. Results are presented in Table 7. Mann-Kendall scatter plots are presented in Appendix E.

Review of the Site SS-34 data trend analysis indicates:

- No statistically significant upward trends for TPH-G and TPH-D data at Site SS-34
- An upward trend was calculated for TPH-G concentrations in resource protection well DM-06; however, not statistically significant

Review of the Site WP-44 data trend analysis indicates:

- No statistically significant upward trends for benzene, TPH-G, and TPH-D data at Site WP-44
- A statistically significant downward trend for benzene in resource protection well CW-14b
- A downward trend for benzene in resource protection well CW-9; however, not statistically significant

- An upward trend for TPH-G in resource protection well CW-9 and a downward trend for TPH-G in resource protection well CW-14b; however, neither trend statistically significant

Review of Site DP-60 data trend analysis indicates:

- Downward trends for TPH-G in resource protection wells CR-02 and TW-9; however, neither trend is statistically significant
- Downward trends for TPH-D in resource protection wells CR-02 and TW-9; however, neither trend is statistically significant
- Statistically significant downward trends for TPH-O in resource protection wells CR-02 and TW-9

This page intentionally left blank.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

Conclusions are based on the trend analyses performed, review of the CY 2015 sampling data, and comparison of CY 2015 analytical data to site cleanup levels.

- Trend analyses at resource protection wells currently sampled at Site SS-34 remain unchanged from CY 2014; however, resource protection well AZ-06 was not sampled in CY 2014. Concentrations of benzene, TPH-D, and TPH-G were below regulatory levels in resource protection wells AZ-06, DM-06 and UA-02 during CY 2015.
- Trend analyses at resource protection wells currently sampled at Site WP-44 continue to show downward trends, except for TPH-G in resource protection well CW-9. The TPH-D and TPH-O concentrations in resource well CW-14b were the only compounds reported above regulatory levels during CY 2015.
- Trend analyses at resource protection wells currently sampled at Site DP-60 continue to show downward trends for TPH-D and TPH-O; however TPH-D concentrations in resource protection well CR-02 and TPH-O concentrations in resource protection well TW-9 were reported above regulatory levels during CY 2015.
- Analytical results indicate no VOC contaminants above regulatory limits at the base boundary resource protection wells during CY 2015.

5.2 RECOMMENDATIONS

- Continue groundwater monitoring at resource protection wells at Sites SS-34, WP-44, and DP-60 until analytical results indicate attenuation of contaminants to levels below site-specific regulatory limits.
- Continue groundwater monitoring at base boundary wells, per the schedule presented in the QPP update (TtEC 2015).

This page intentionally left blank.

6. REFERENCES

Air Force (U.S. Air Force). 2004. Final Second 5-Year Review Report for the Washrack/Treatment Area (WTA) De-Listed National Priorities List (NPL) Site, McChord Air Force Base, Washington. September 2004.

_____. 1996. IRP Decision Document, McChord AFB, No Further Response Action Planned Sites: LF 01, SS-34, WP-44, and WP-64. February 1996.

_____. 1995. Final Remedial Action Report for the Washrack Treatment Area National Priorities List Site, McChord Air Force Base, Washington. June 1995.

CH2M HILL. 1982. Installation Restoration Program Records Search for McChord Air Force Base, Washington Air Force Engineering and Services Center, Tyndall AFB, Florida, and Military Airlift Command, Scott AFB, Illinois.

Ebasco Environmental. 1992a. McChord Air Force Base Washrack Treatment Area Remedial Investigation/Feasibility Study. Final. Prepared for the U.S. Department of Energy.

_____. 1992b. McChord Air Force Base Washrack Treatment Area Record of Decision. Final. Prepared for the U.S. Department of Energy.

Ecology (Washington State Department of Ecology). 2005. Hazardous Sites List. February 23. http://www.ecy.wa.gov/programs/tcp/mtca_gen/hazsites.html.

FWENC (Foster Wheeler Environmental Corporation). 1995. McChord Air Force Base Site WP-44 Remedial Investigation/Feasibility Study Report. Final. Prepared for the U.S. Department of Energy.

Helsel, D.R., and R.M. Hirsch. 2002. *Chapter A3 Statistical Methods in Water Resources*. Book 4 - Hydrologic Analysis and Interpretation. Techniques of Water – Resources Investigations of the United States Geological Survey.

TtEC (Tetra Tech EC, Inc.). 2015. Quality Project Plan Update, Remedial Action – Operations of Basewide Groundwater Monitoring (SS-34, WP-44, DP-60) and Base Boundary Monitoring, Joint Base Lewis-McChord, McChord Field, Washington.

_____. 2012. Project Summary Report No. 8 (January 1, 2011, through December 31, 2011), Remedial Action – Operation (RA-O) Monitoring and Optimization (Site SS-34N) and Basewide RA-O Monitoring (Sites SS-34, WP-44, DP-60), Joint Base Lewis-McChord – McChord Field, Washington. May 2012.

_____. 2011. Quality Project Plans, Remedial Action–Operation of Basewide Groundwater Monitoring (SS-34, WP-44 and DP-60) and Base Boundary Monitoring, Joint Base Lewis-McChord – McChord Field, Washington. August 2011.

URSG and FWENC (URS Greiner, Inc. and Foster Wheeler Environmental Corporation). 1998. McChord Air Force Base Groundwater Monitoring Program for Multiple Sites, CY 1997 Annual Report. Final.

TABLES

This page intentionally left blank.

Table 1. Resource Protection Well Construction Details

Well ID	North UTM	East UTM	Ground Elevation (ft/AMSL)	Meas. Pt. Elevation (ft/AMSL)	Total Depth (ft)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
Site SS-34 Monitoring Wells										
AZ-06	664957.66	1502943.598	292.4	292.17	53	13	53	279.17	239.17	29-Aug-83
DM-06	664549.05	1502545.1	292.3	293.96	35	15	35	278.96	258.96	6-Jun-86
UA-02	664750.37	1502512.89	292.2	293.56	37.7	17.7	37.7	275.86	255.86	8-Mar-88
Site WP-44 Monitoring Wells										
CW-9	663418.00	1504325	300.2	299.9	32	22	32	277.9	267.9	5-Feb-93
CW-14b	662984.00	1504374	305.3	305.28	46	43	46	262.28	259.28	6-May-93
Site DP-60 Monitoring Wells										
CR-02	665905.86	1505167.172	276.6	275.73	38	8	38	267.73	237.73	28-Aug-84
TW-9	666225.66	1505092.889	276.62	276.62	24.5	4.5	24.5	272.12	252.12	15-Jan-96
Base Boundary Monitoring Wells										
CW-4	664934.9	1500760.2	282.71	284.29	26.9	16.9	26.9	267.39	257.39	5-Feb-93
LT-2	670681.0	1509089.0	284.6	286.6	26.0	11.6	21.6	275.0	265.0	7-Aug-93
LT-3	670734.0	1506793.0	276.40	275.89	31	11	31	264.89	244.89	17-Aug-93
LT-4	670852.0	1505537.0	281.60	283.25	26.3	16.3	26.3	266.95	256.95	17-Aug-93
LT-5	670140.0	1504739.0	278.60	279.79	30.5	20.5	30.5	259.29	249.29	17-Aug-93
LT-6	668440.0	1503819.0	275.00	274.63	25	15	25	259.63	249.63	18-Aug-88
LT-7	666017.0	1503734.0	274.00	273.53	19	9	19	264.53	254.53	17-Aug-93
LT-10	669713.0	1504250.0	274.90	274.39	24.5	14.5	24.5	259.89	249.89	20-Sep-94
LT-11	667648.0	1503719.0	273.50	273.37	27.5	17.5	27.5	255.87	245.87	20-Sep-94

Abbreviations and Acronyms:
ft/AMSL – feet above mean sea level
Meas. Pt. Elevation – measure point elevation, elevation of top of casing
ft/bgs – feet below ground surface

Table 2. Sampling Summary

Well ID	Latest Sample Date	Sample Frequency	Measure Depth-to-Water	Constituents of Concern	Rationale for Sampling
Site SS-34 Resource Protection Wells					
AZ-06	26-Mar-15	Annual	Yes	BTEX, TPH-G,D,O	Compliance monitoring with JBLM decision document
DM-06	26-Mar-15	Annual	Yes	BTEX, TPH-G,D,O	Compliance monitoring with JBLM decision document
UA-02	26-Mar-15	Annual	Yes	BTEX, TPH-G,D,O	Compliance monitoring with JBLM decision document
Site WP-44 Resource Protection Wells					
CW-9	26-Mar-15	Annual	Yes	BTEX, TPH-G,D,O	Compliance monitoring with JBLM decision document
CW-14b	26-Mar-15	Annual	Yes	BTEX, TPH-G,D,O	Compliance monitoring with JBLM decision document
Site DP-60 Resource Protection Wells					
CR-02	24-Jun-15	Annual	Yes	TPH-D,O	Compliance monitoring with JBLM decision document
TW-9	24-Jun-15	Annual	Yes	TPH-D,O	Compliance monitoring with JBLM decision document
Base Boundary Resource Protection Wells					
CW-4	26-Mar-15	Spring every 3 years	Yes	VOCs	Early warning detection sampling, sampled in 2015
LT-2	25-Mar-13	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2016
LT-3	26-Feb-14	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2017
LT-4	26-Mar-15	Spring every 3 years	Yes	VOCs	Early warning detection sampling, sampled in 2015
LT-5	26-Feb-14	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2017
LT-6	26-Mar-15	Spring every 3 years	Yes	VOCs	Early warning detection sampling, sampled in 2015
LT-7	26-Feb-14	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2017
LT-10	25-Mar-13	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2016
LT-11	25-Mar-13	Spring every 3 years	Yes	VOCs	Early warning detection sampling, will be sampled next in 2016

Notes:
Bold – Resource protection wells that were sampled in 2015.

Abbreviations and Acronyms:
BTEX – benzene, toluene, ethylbenzene, and xylenes analyzed using EPA Method 8260C
TPH-D – diesel-range total petroleum hydrocarbons analyzed using Method NWTPH-Dx
TPH-G – gasoline-range total petroleum hydrocarbons analyzed using Method NWTPH-Gx
TPH-O – heavy oil-range total petroleum hydrocarbons analyzed using Method NWTPH-Dx
VOC – total volatile organic compounds analyzed using EPA Method 8260C

Table 3. Depth-to-Water and Water Quality Parameter Measurements – 2015

Well ID	Date	Meas. Pt. Elevation (ft/AMSL)	Depth to SWL (ft)	SWL Elev. (ft/AMSL)	pH	Cond. (ms/cm)	DO (mg/L)	ORP (mV)	Temp ºC
Site SS-34 Resource Protection Wells									
AZ-06	26-Mar-15	292.17	24.16	268.01	6.6	188	5.37	132	14.3
DM-06	26-Mar-15	293.96	29.35	264.61	6.4	133	3.83	221	14.1
UA-02	26-Mar-15	293.56	29.36	264.20	6.2	121	2.56	223	12.5
Site WP-44 Resource Protection Wells									
CW-9	26-Mar-15	299.90	20.96	278.94	7.0	217	6.35	142	16.4
CW-14b	26-Mar-15	305.28	27.93	277.35	7.5	382	5.35	-70	14.9
Site DP-60 Resource Protection Wells									
CR-02	24-Jun-15	275.73	8.15	267.58	-	-	-	-	-
TW-9	24-Jun-15	276.62	11.70	264.92	-	-	-	-	-
Base Boundary Resource Protection Wells									
CW-4	26-Mar-15	284.29	20.16	264.13	6.0	64	9.94	238	11.6
LT-4	26-Mar-15	283.25	21.84	261.41	6.4	104	9.21	192	16.2
LT-6	26-Mar-15	274.63	14.57	260.06	6.7	139	9.78	164	13.5

Abbreviations and Acronyms:
- – not measured
Cond. (ms/cm) conductivity microsiemens per centimeter
DO (ppm) – dissolved oxygen parts per million
ft/AMSL – feet above mean sea level
Meas. Pt. Elevation – measure point elevation, elevation at top of casing
ORP (mv) – oxygen/reduction potential millivolts
SWL – static water level
Temp. (ºC) – temperature degrees Celsius

Table 4. Constituents of Concern Concentrations – 2015

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	M&P Xylenes (µg/L)	O Xylenes (µg/L)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)
Site SS-34 Resource Protection Wells									
AZ-06	26-Mar-15	<0.5	<0.5	<0.5	<0.5	<0.5	190 JY	280 Y	150 L
DM-06	26-Mar-15	<0.5	0.13 J	<0.5	<0.5	<0.5	<250	32 J	64 J
UA-02	26-Mar-15	<0.5	<0.5	<0.5	<0.5	<0.5	<250	23 J	100 J
Site WP-44 Resource Protection Wells									
CW-9	26-Mar-15	<0.5	0.22 J	<0.5	<0.5	<0.5	<250	37 J	57 J
CW-14b	26-Mar-15	0.11 J	0.07 J	<0.5	<0.5	<0.5	110 JY	**2,700 Y**	**520 L**
Site DP-60 Resource Protection Wells*									
CR-02	24-Jun-15	-	-	-	-	-	-	**1900 Y**	470 J
W-9	24-Jun-15	-	-	-	-	-	-	970 Y	**570 Z**
Site RG (MCL or MTCA)		**5**	**1,000**	**700**	**1,000**	**1,000**	**1,000**	**500 or 1,000**	**500**
Current MTCA Method A		**5**	**1,000**	**700**	**1,000**	**1,000**	**800**	**500**	**500**

Base Boundary Monitoring Wells		
Well ID	**Date**	**Notes**
CW-4	26-Mar-15	No VOCs of concern detected in sample
LT-4	26-Mar-15	No VOCs of concern detected in sample
LT-6	26-Mar-15	No VOCs of concern detected in sample

Notes:
Bold – Analyte detected above MCL remediation goal value.
* Site DP-60's site-specific cleanup level is 1,000 µg/L for TPH-D.
- not measured, not applicable

Abbreviations and Acronyms:
µg/L – micrograms per liter
MCL – maximum contaminant level per WAC 173-340-900
TPH-D – diesel-range total petroleum hydrocarbons
TPH-G – gasoline-range total petroleum hydrocarbons
TPH-O – heavy oil-range total petroleum hydrocarbons
J – The result is an estimated value.
L – The chromatographic fingerprint of the sample resembles a petroleum product with < amount of heavier molecular weight than calibration standard.
Y – The chromatographic fingerprint of the samples resembles a petroleum product but does not match the calibration standard.
Z – The chromatographic fingerprint of the sample does not resemble a petroleum product.
VOC – total volatile organic compounds analyzed using EPA Method 8260C

Table 5. Descriptive Statistics

Well ID	First Sample Date	Last Sample Date	Constituent (µg/L)	Number of NDs	Number of Samples	Sample Mean	Standard Deviation	Minimum Conc.	Maximum Conc.	Date*	Normally or Log Normally Distributed?
Site SS-34											
AZ-06	9/25/95	3/26/2015	Benzene	23	34	4.77	17.02	0.04	100	9/25/95	Non-detects
			TPH-G	2	34	3,596.91	3,675.03	25	20,000	9/25/95	No
			TPH-D	1	33	10,600.59	29,314.54	120	160,000	9/15/04	Yes
DM-04	9/25/95	9/15/2004	Benzene	14	19	7.45	13.81	0.20	57	9/10/98	Non-detects
			TPH-G	0	19	3,547.37	1,679.08	1,700	8,000	9/10/98	Yes
			TPH-D	0	19	7,406.32	15,568.96	670	69,000	9/10/98	Yes
DM-06	3/10/2005	3/26/2015	Benzene	8	10	0.37	0.26	0.2	1	4/3/12	Non-detects
			TPH-G	5	10	109.60	98.92	21	250	9/11/08	Yes
			TPH-D	5	10	112.90	58.42	32	230	3/10/05	Non-detects
UA-02	3/10/2005	3/26/2015	Benzene	10	10	0.34	0.26	0.2	1	4/3/12	Non-detects
			TPH-G	6	10	112.16	97.59	25	250	9/11/08	Non-detects
			TPH-D	7	10	81.60	34.16	23	130	4/3/12	Non-detects
Site WP-44											
CW-9	9/22/1995	3/26/2015	Benzene	3	35	18.38	18.24	0.5	70	3/15/01	No
			TPH-G	3	35	2,724.00	3,257.30	100	17,000	3/17/03	Yes
			TPH-D	6	35	801.26	592.28	37	2,000	9/13/05	Yes
CW-14b	9/22/1995	3/26/2015	Benzene	3	35	2.10	2.19	0.11	9.2	9/8/03	Yes
			TPH-G	2	35	236.89	90.52	100	480	3/17/03	Yes
			TPH-D	1	35	3,514.00	1,616.12	240	6,800	3/23/04	Yes
Site DP-60											
CR-02	4/5/1995	6/24/2015	TPH-G	0	15	634.67	224.30	270	1,000	3/16/01	Yes
			TPH-D	0	24	5,648.33	11,283.04	860	55,000	3/17/98	No
			TPH-O	5	16	720.94	772.91	55	3,200	3/16/01	Yes
TW-09	4/5/1995	6/24/2015	TPH-G	0	15	533.33	290.51	210	1,200	4/5/95	Yes
			TPH-D	0	24	1,775.83	1,960.97	170	7,800	3/10/05	Yes
			TPH-O	5	16	960.00	1,111.11	110	4,100	3/10/05	Yes

Notes:
Linear concentration graphs not plotted if there are less than four data points or if non-detects are more than half of the data set.
Trend graphs not plotted if there are less than eight data points or if non-detects are half or more than half of the data set.
Linear concentration graphs are presented in Appendix D. Trend graphs are presented in Appendix E.
* Date sample was collected from monitoring well with highest concentration.
- not analyzed, not applicable

Abbreviations and Acronyms:
µg/L – micrograms per liter
ND – non-detect – constituent not detected above practical quantification limit
TPH-D – diesel range total petroleum hydrocarbons
TPH-G – gasoline range total petroleum hydrocarbons
TPH-O – heavy oil range total petroleum hydrocarbons

Table 6. Test for Normality and Linear Regression Trends

Well ID	Constituent (µg/L)	P Value	Normally Distributed?	Log P Value	Log Normally Distributed?	Linear Regression P Value	Slope	Trend	Statistically Significant?
Site SS-34									
AZ-06	TPH-G	<0.0001	No	0.0007	No	-	-	-	-
	TPH-D	<0.0001	No	0.0611	Yes	0.6123	-0.00006445	Down	No
DM-04	TPH-G	0.011	No	0.471	Yes	0.0146	-0.0002286	Down	Yes
	TPH-D	<0.0001	No	0.056	Yes	0.2119	0.0003227	Up	No
DM-06	TPH-G	0.003	No	0.165	Yes	0.0849	0.0004381	Up	No
Site WP-44									
CW-9	Benzene	0.0001	No	0.009	No	-	-	-	-
	TPH-G	<0.0001	No	0.1109	Yes	0.4683	0.00008167	Up	No
	TPH-D	0.0064	No	0.0571	Yes	0.1952	-0.0001073	Down	No
CW-14b	Benzene	<0.0001	No	0.3966	Yes	<0.0001	-0.0003001	Down	Yes
	TPH-G	0.0683	Yes	-	-	0.0911	-0.01311	Down	No
	TPH-D	0.0798	Yes	-	-	0.6877	-0.05684	Down	No
Site DP-60									
CR-02	TPH-G	0.688	Yes	-	-	0.2178	-0.05757	Down	No
	TPH-D	<0.0001	No	0.003	No	-	-	-	-
	TPH-O	0.0002	No	0.802	Yes	0.0487	-0.0002658	Down	Yes
TW-9	TPH-G	0.015	No	0.777	Yes	0.0661	-0.0001811	Down	No
	TPH-D	<0.0001	No	0.408	Yes	0.4999	-0.00005596	Down	No
	TPH-O	0.0001	No	0.761	Yes	0.0231	-0.0003174	Down	Yes

Notes:
- not analyzed, not applicable

Abbreviations and Acronyms:
µg/L – micrograms per liter
TPH-D – diesel range total petroleum hydrocarbons
TPH-G – gasoline range total petroleum hydrocarbons
TPH-O – heavy oil range total petroleum hydrocarbons

Table 7. Mann-Kendall Test on Non-Parametric Data

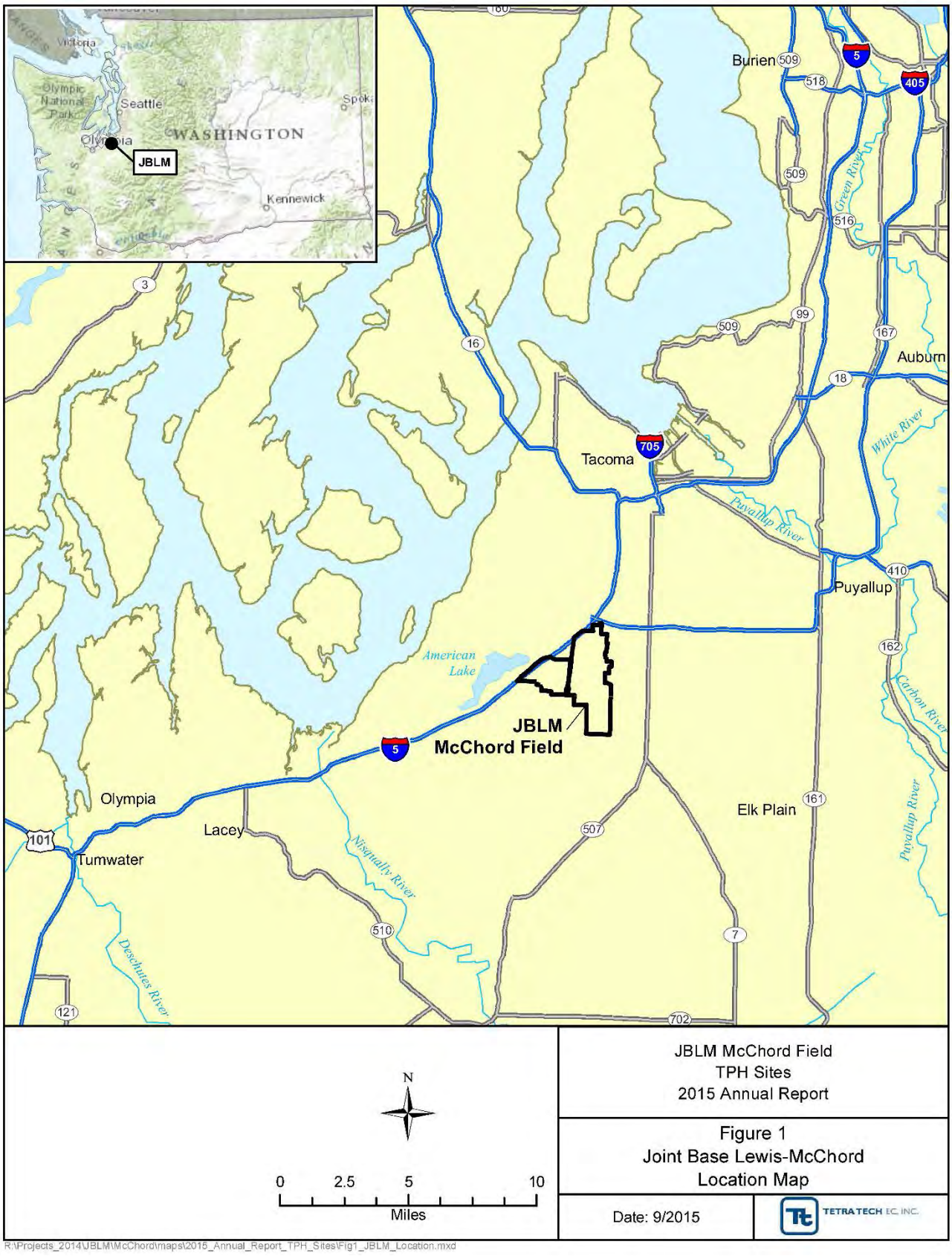
Well ID	Constituent (µg/L)	Tau Statistic	Two-Tailed P Value	Trend	Statistically Significant?
Site SS-34					
AZ-06	TPH-G	-0.420	0.0005	Down	Yes
WP-44					
CW-9	Benzene	-0.245	0.0394	Down	No
DP-60					
CR-02	TPH-D	-0.062	0.6727	Down	No

Abbreviations and Acronyms:
µg/L – micrograms per liter
TPH-D – diesel-range total petroleum hydrocarbons
TPH-G – gasoline-range total petroleum hydrocarbons
TPH-O – heavy oil-range total petroleum hydrocarbons

This page intentionally left blank.

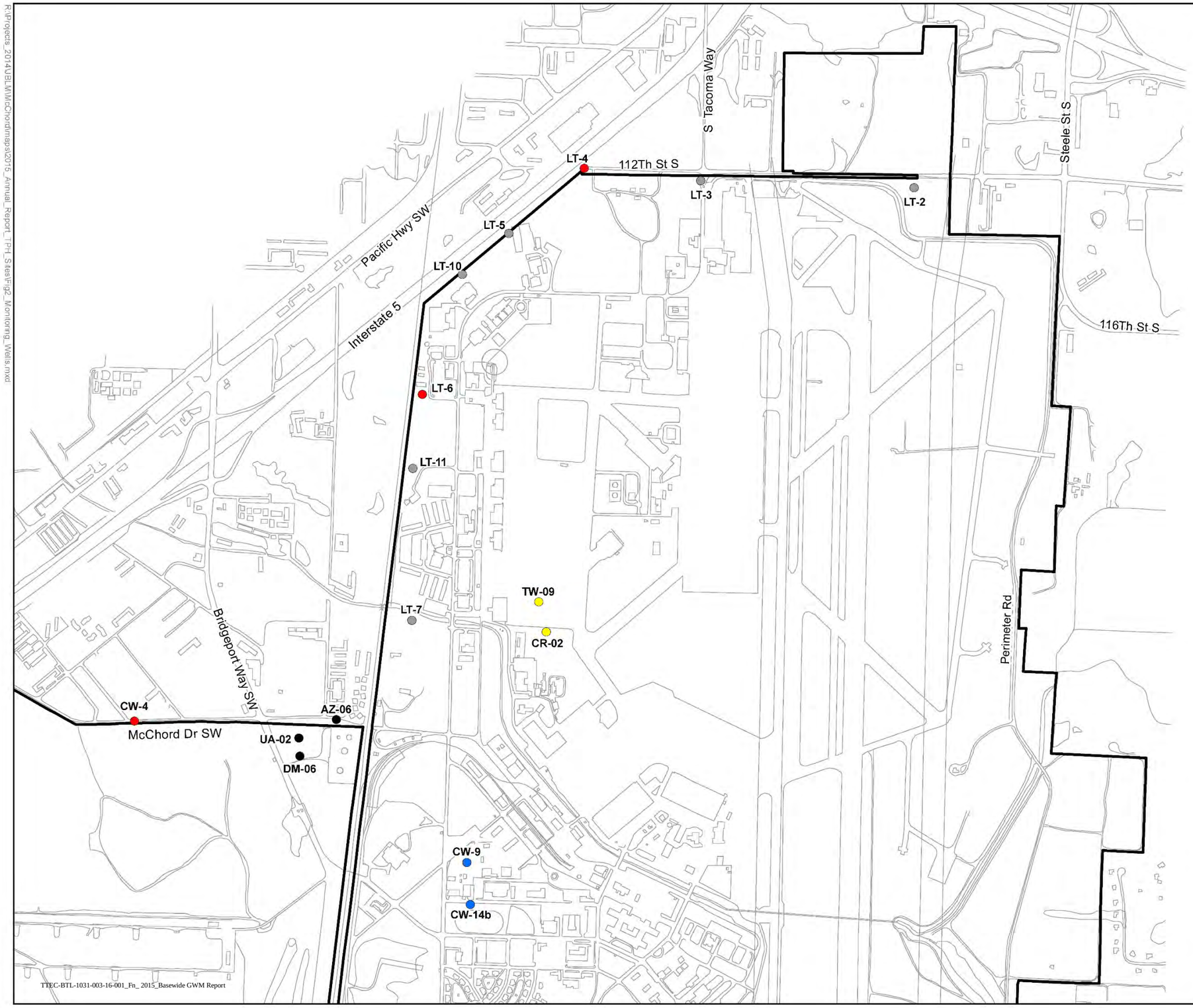
FIGURES

This page intentionally left blank.


Victoria
Olympic National Park
Seattle
WASHINGTON
JBLM
Kennewick
Burien
Auburn
Tacoma
Puyallup
Olympia
Lacey
Tumwater
Elk Plain
JBLM
McChord Field
American Lake
Green River
White River
Puyallup River
Carbon River
Nisqually River
Deschutes River
N
0 2.5 5 10
Miles
JBLM McChord Field
TPH Sites
2015 Annual Report
Figure 1
Joint Base Lewis-McChord
Location Map
Date: 9/2015
TETRA TECH EC, INC.
R:\Projects_2014\JBLM\McChord\maps\2015_Annual_Report_TPH_Sites\Fig1_JBLM_Location.mxd

This page intentionally left blank.

R:\Projects_2014\JBLM\McChord\maps\2015_Annual_Report_TPH_Sites\Fig2_Monitoring_Wells.mxd



Site SS-34 Resource Protection Well Sampled in 2015

Site WP-44 Resource Protection Well Sampled in 2015

Site DP-60 Resource Protection Well Sampled in 2015

Base Boundary Resource Protection Well Sampled in 2015

Other Project Resource Protection Well Not Sampled in 2015

Base Boundary

Basemap

N

0 1,000 2,000 4,000

Feet

JBLM McChord Field
TPH Sites
2015 Annual Report

Figure 2
Sites SS-34, WP-44, SP-60 and
Base Boundary Monitoring Locations
2015

Date: 9/2015

TETRA TECH EC, INC.

TTEC-BTL-1031-003-16-001_Fn_ 2015_Basewide GWM Report

This page intentionally left blank.

R:\Projects_2014\JBLM\McChord\maps\2015_Annual_Report_TPH_Sites\Fig3_Contours_2015.mxd

LT-4
261.41
LT-3
LT-2
LT-5
LT-10
LT-6
260.06
LT-11
LT-7
TW-09
264.92
CR-02
267.58
CW-4
264.13
UA-02
264.20
AZ-06
268.01
DM-06
264.61
CW-9
278.94
CW-14b
277.35
262
264
266
268
270
272
274
276
278

Site SS-34 Resource Protection Well Sampled in 2015

Site WP-44 Resource Protection Well Sampled in 2015

Site DP-60 Resource Protection Well Sampled in 2015

Base Boundary Resource Protection Well Sampled in 2015

Other Project Resource Protection Well Not Sampled in 2015

Base Boundary

Basemap

Groundwater Elevation Contours

Labels

Well ID: CW-9

Groundwater Elevation (Ft/AMSL): 278.94

N

0 1,000 2,000 4,000

Feet

JBLM McChord Field
TPH Sites
2015 Annual Report

Figure 3
Sites SS-34, WP-44, SP-60 and Base Boundary
Groundwater Elevation Contours
2015

Date: 9/2015

TETRA TECH EC, INC.

This page intentionally left blank.

APPENDIX A

McCHORD FIELD RESOURCE PROTECTION WELL INVENTORY

This page intentionally left blank.

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
Wells Completed in the Vashon Aquifer										
AZ-04	664924.06	1502609.91	294.92	294.51	57.5	7.5	57.5	287.01	237.01	7/20/1983
AZ-06	664957.66	1502943.598	292.4	292.17	53	13	53	279.17	239.17	8/29/1983
CR-01	665914.45	1504969.16	277.16	275.73	38	8	38	267.73	237.73	6/12/1984
CR-02	665905.86	1505167.172	276.6	275.73	38	8	38	267.73	237.73	8/28/1984
CW- 1	663528.28	1502988.26	291.71	293.89	36	26	36	267.89	257.89	2/3/1993
CW- 2	663867.2	1502341.41	273.39	275.18	49.5	39.5	49.5	235.68	225.68	1/28/1993
CW- 3	664488.85	1501791.53	277.67	279.25	22.5	12.5	22.5	266.75	256.75	1/29/1993
CW- 4	664934.92	1500760.2	282.71	284.29	26.9	16.9	26.9	267.39	257.39	2/5/1993
CW- 9	663418	1504325	300.2	299.9	32	22	32	277.9	267.9	2/5/1993
CW-11	667981	1504396	277.76	277.5	30	20	30	257.5	247.5	1/29/1993
CW-12	664043.79	1511152.2	291.67	293.83	21	11	21	282.83	272.83	2/2/1993
CW-13	660349	1504502	297.2	297.15	26	16	26	281.15	271.15	5/3/1993
CW-14a	662984	1504389	305.5	305.49	35	25	35	280.49	270.49	5/6/1993
CW-14b	662984	1504374	305.3	305.28	46	43	46	262.28	259.28	5/6/1993
CW-14c	682970	1504381	306	305.69	169.5	159.5	169.5	146.19	136.19	11/23/1993
CW-15	663945	1504604	292.4	292.2	27	17	27	275.2	265.2	5/7/1993
CW-15c	663982	1504574	293	292.66	108.6	98.6	108.6	194.06	184.06	11/5/1993
CW-18c	662559	1504919	310.2	309.51	207.4	197.4	207.4	112.11	102.11	12/8/1993
CW-20	665214	1505366	281.2	280.75	21	11	21	269.75	259.75	10/22/1993
CW-21	663499	1504592	294.8	294.46	27.5	17.5	27.5	276.96	266.96	9/21/1994
CW-22	663641	1504141	302.45	301.96	31.5	21.5	31.5	280.46	270.46	9/20/1994
CW-23	663443	1504008	304.8	304.08	29.5	19.5	29.5	284.58	274.58	9/20/1994
CW-24	662980	1504134	305.15	304.62	33.7	23.7	33.7	280.92	270.92	9/21/1994
CW-25	665548	1503521	292.72	292.26	36	26	36	266.26	256.26	9/20/1994
CW-26	665725	1503445	292.9	292.73	36	26	36	266.73	256.73	9/20/1994
CW-29b	665207	1505269	284.3	284.03	23	18	23	266.03	261.03	8/8/1990
CW-31a	664888.82	1504246.75	296.58	296.28	99.5	89	99.5	207.28	196.78	7/18/1990
CW-32a	666768.19	1504428.52	276.86	276.58	110	100	110	176.58	166.58	8/10/1990
CW-33c	660084	1505235	302.97	302.32	80	70	80	232.32	222.32	9/23/1994

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
CW-34c	658775	1505171	311.12	310.45	105	95	105	215.45	205.45	10/4/1994
CW-35	664008	1500738	283.13	286.52	33.5	23.5	33.5	263.02	253.02	9/4/1998
CW-36	663214.55	1501982.48	286.42	288.63	31.5	21.5	31.5	267.13	257.13	9/4/1998
CW-37	665577.74	1503740.203	294.18	293.77	39.5	29.5	39.5	264.27	254.27	10/29/1999
CW-38	665802.99	1503455.116	293.3	292.92	39	29	39	263.92	253.92	10/27/1999
CW-39	665622.18	1503439.123	293.3	292.795	51	31	51	261.795	241.795	10/28/1999
CW-40	665517.84	1503422.976	290	289.315	33	23	33	266.315	256.315	10/28/1999
CW-41	665412.16	1503395.226	295.61	295.09	39	29	39	266.09	256.09	10/28/1999
CW-41a	665412.32	1503387.095	296.66	296.18	90	80	90	216.18	206.18	3/22/2000
CW-43	665316.02	1503381.479	297.09	296.73	41	31	41	265.73	255.73	3/13/2000
CW-44	665408.22	1503528.644	292.82	292.47	37	27	37	265.47	255.47	3/13/2000
CW-45	666099.02	1502802.881	289.46	288.99	50	40	50	248.99	238.99	3/14/2000
CW-45a	666106.09	1502803.207	289.43	289.13	90	80	90	209.13	199.13	3/24/2000
CW-46	665915.78	1502808.78	288.9	288.44	50	40	50	248.44	238.44	3/14/2000
CW-47	665756.92	1502806.057	288.72	288.34	50	40	50	248.34	238.34	3/14/2000
CW-48	665587.67	1502797.647	289.93	289.31	40	30	40	259.31	249.31	3/15/2000
CW-49	665415.3	1502793.239	293.91	293.57	40	30	40	263.57	253.57	3/15/2000
CW-50	665353.38	1503921.084	292.08	291.37	60	40	60	251.37	231.37	6/5/2001
CW-51	665136.16	1503770.064	298.61	298.1	32	22	32	276.1	266.1	6/5/2001
CW-52	665186.62	1503372.15	298.32	297.79	30	20	30	277.79	267.79	6/5/2001
CW-53	666225.36	1502804.771	289.49	289.01	50	30	50	259.01	239.01	6/6/2001
CW-54	666528.21	1502836.345	271.5	270.98	35	25	35	245.98	235.98	6/12/2001
CW-55a	666048.07	1502616.473	288.84	288.38	45	35	45	253.38	243.38	6/8/2001
CW-55b	666048.29	1502622.197	288.79	288.26	80	70	80	218.26	208.26	6/8/2001
CW-56	666058.1	1502493.892	288.91	288.48	50	30	50	258.48	238.48	6/7/2001
CW-57	666063.95	1502331.804	287.8	287.27	50	40	50	247.27	237.27	6/7/2001
CW-58	666076.22	1502188.899	286.33	285.67	50	40	50	245.67	235.67	6/6/2001
CW-59	665851.69	1502179.108	285.49	285.01	35	25	35	260.01	250.01	6/6/2001
CW-60	665646.01	1502163.849	287.19	286.68	36	26	36	260.68	250.68	6/5/2001
CW-61	666415.29	1502159.969	286.59	286.24	50	40	50	246.24	236.24	6/11/2001

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
CW-62	666729.07	1502207.164	273.5	273.06	40	30	40	243.06	233.06	6/11/2001
CW-63	665664.07	1503843.52	276.74	276.15	25	15	25	261.15	251.15	3/11/2008
CW-64	665749.29	1503276.7	293.09	292.6	60	45	60	247.6	232.6	3/11/2008
CW-65	665843.11	1503220.25	291.61	291.06	60	45	60	246.06	231.06	3/10/2008
CW-65a	666133.29	1503481.255	273.58	273.29	80	70	80	203.29	193.29	6/8/2001
CW-66	665793.15	1503089.06	290.53	290.14	44	29	44	261.14	246.14	3/10/2008
CW-67	665813.85	1502808.89	288.7	288.3	54	39	54	249.3	234.3	6/15/2009
CW-68	665867.04	1502807.82	288.71	288.42	55	40	55	248.42	233.42	6/15/2009
CW-69	665966.43	1502809.94	288.56	288.26	55	40	55	248.26	233.26	6/16/2009
CW-70	666156.91	1502801.48	289.43	289.06	55	40	55	249.06	234.06	6/16/2009
CW-71	666023.71	1502712.2	289.07	288.72	55	40	55	248.72	233.72	6/17/2009
DA- 1a	657813.23	1502063.74	298.9	299.83	37.1	32.1	37.1	267.73	262.73	6/14/1989
DA- 1b	657820.18	1502073.91	299.3	300.76	67.8	62.8	67.8	237.96	232.96	6/13/1989
DA- 2a	659240.98	1502641.52	299.8	301.79	41.2	36.2	41.2	265.59	260.59	3/9/1989
DA- 2b	659241.85	1502650.15	299.9	301.3	70	65	70	236.3	231.3	3/9/1989
DA- 2c	659250.18	1502671.78	300.2	300.74	118	108	118	192.74	182.74	4/4/1989
DA- 4a	658040.99	1500941.48	283.5	285.05	41.6	36.6	41.6	248.45	243.45	3/31/1989
DA- 4b	658043.94	1500925.917	283	284.4	65.9	60.9	65.9	223.5	218.5	3/15/1989
DA- 6a	660132.47	1501596.222	295.7	295.27	38	33	38	262.27	257.27	3/16/1989
DA- 7b	660153.49	1500358.87	281.9	281.34	65.1	60.1	65.1	221.24	216.24	3/20/1989
DA- 7e	660134.99	1500343.84	281.3	280.98	125	115	125	165.98	155.98	11/14/1989
DA- 9a	660842.65	1500144.2	284.8	286.32	35.6	30.6	35.6	255.72	250.72	3/30/1989
DA- 9b	660842.62	1500150.77	284.3	285.92	65.5	60.5	65.5	225.42	220.42	3/30/1989
DA-11a	660907.18	1498677.45	271.2	272.79	24.7	19.7	24.7	253.09	248.09	3/22/1989
DA-11b	660912.5	1498687.05	271.1	272.99	50	45	50	227.99	222.99	3/21/1989
DA-12e	660550.12	1497151.43	272	273.11	133	123	133	150.11	140.11	10/13/1989
DA-13a	661371.08	1497409.91	272.1	273.65	30.9	25.9	30.9	247.75	242.75	3/13/1989
DA-21a	660537.71	1500254.8	281.4	283.55	32.6	27.6	32.6	255.95	250.95	10/30/1989
DA-21b	660545.83	1500252.89	281.6	283.24	63	58	63	225.24	220.24	10/27/1989
DA-25b	660323.69	1499246.47	275.2	276.9	70	65	70	211.9	206.9	10/13/1989

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
DA-28	661151	1498191	262.9	266.19	31.2	21.2	31.2	244.99	234.99	5/11/1993
DA-29	660731	1499446	269	268.63	48.2	38.2	48.2	230.43	220.43	5/12/1993
DA-30a	660565	1498800	271.1	270.63	33	23	33	247.63	237.63	5/11/1993
DA-30b	660562	1498790	270.7	270.36	59	49	59	221.36	211.36	5/10/1993
DA-31	659947	1500659	278.2	277.64	64	54	64	214	224	04/26/2010
DA-32	660125	1500401	282.6	282.2	64	54	64	218	228	04/27/2010
DB- 3	657783.96	1501150.95	289.62	289.24	35.1	30.1	35.1	259.14	254.14	3/23/1989
DB- 6	660741.14	1499440.41	269.7	269.29	14.4	9.4	14.4	259.89	254.89	3/29/1989
DB-11	659463	1501680	292.5	293.61	33	28	33	265.61	260.61	4/6/1989
DM-06	664549.05	1502545.1	292.3	293.96	35	15	35	278.96	258.96	6/6/1986
DO-1a	660451.27	1497987.56		270.9	48.2	18.2	48.2	252.7	222.7	3/22/1992
DO-2	661103	1498942		274.1	70	40	70	234.1	204.1	1/27/1992
DO-3	660763	1500015		282.2	94.6	64.6	94.6	217.6	187.6	2/17/1992
DO-5a	661294	1497825	270.8	270.4	9	4	9	266.4	261.4	5/12/1993
DO-5b	661294	1497825	270.8	270.5	18	13	18	257.5	252.5	5/12/1993
DR-05	661336.37	1499132.249	269.12	270.77	48	8	48	262.77	222.77	12/14/1984
DT-1	660459.75	1498225.65	272.15	271.77	28	18	28	253.77	243.77	9/3/1998
DT-2	661023.91	1499086.53	274.88	274.37	40	30	40	244.37	234.37	9/3/1998
DX-1	660358.44	1497957.04	274.3	270.54	70.7	38.7	70.7	231.84	199.84	2/29/1992
DX-2	661123.55	1498965.33	273.4	269.91	72.2	39.4	72.2	230.51	197.71	1/19/1992
DX-3	660751.21	1499988	281.2	277.68	97.2	69.2	97.2	208.48	180.48	2/13/1992
DZ-13	660321.4	1497985.852	273.7	272.61	28	18	28	254.61	244.61	5/20/1985
EH-4b	661034.98	1506530.14	298.9	301.2	57.6	52.6	57.6	248.6	243.6	5/21/1990
EPA-W-5	659816.94	1496604.37	265.9	266.84	45	40	45	226.84	221.84	8/11/1983
FTA-1a	661123.95	1510007.98	310.79	310.4	24	14	24	296.4	286.4	3/20/1997
FTA-2a	661166.87	1509541.23	308.57	311.05	26	16	26	295.05	285.05	3/20/1997
FTA-3a	661430.24	1509713.38	311.63	313.61	24.6	14.6	24.6	299.01	289.01	3/20/1997
FTA-4a	661322.08	1509564.1	309.54	311.83	26	16	26	295.83	285.83	3/20/1997
FTA-4b	661322.08	1509564.1	309.54	311.84	78	68	78	243.84	233.84	3/20/1997
FTA-5a	661000.2	1509718.862	309.24	311.79	22	12	22	299.79	289.79	3/5/1998

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
FTA-6a	661406.62	1509853.403	310.31	312.84	25	15	25	297.84	287.84	3/5/1998
IH-1a	658724.58	1511278.96	330	332.43	37.8	32.8	37.8	299.63	294.63	5/10/1990
IH-1b	658733.67	1511277.51	329.8	331.8	56.8	51.8	56.8	280	275	5/9/1990
IH-1c	658675.4	1511307.46	330.7	332.45	99.4	84.9	99.4	247.55	233.05	6/19/1990
IH-2a	659602.77	1509376.26	327.4	329.52	44.8	39.8	44.8	289.72	284.72	5/7/1990
IH-2b	659611.15	1509376.99	327.5	329.44	57.3	52.3	57.3	277.14	272.14	5/14/1990
IH-3a	659856.96	1509664.64	326	327.69	42.8	37.8	42.8	289.89	284.89	5/7/1990
IH-3b	659854.28	1509683.01	326.1	328.13	57.8	52.8	57.8	275.33	270.33	5/4/1990
IH-3c	659844.9	1509683	326.1	327.64	89.2	79.2	89.2	248.44	238.44	6/15/1990
IW- 1	665570.94	1503817.99	293.63	295.06	40	30	40	265.06	255.06	9/18/2002
IW- 2	665510.04	1503819.67	292.56	294.28	45	35	45	259.28	249.28	9/18/2002
IW- 3	665459.31	1503819.11	291.78	293.04	37	27	37	266.04	256.04	9/18/2002
IW- 4	665409.84	1503819.25	291.04	292.92	25	15	25	277.92	267.92	9/19/2002
IW- 5	665516.95	1503770.69	292.78	294.79	25	15	25	279.79	269.79	9/19/2002
IW- 6	665522.07	1503720.57	292.47	294.32	25	15	25	279.32	269.32	9/19/2002
IW- 7	665528.94	1503671.64	292.34	294.43	25	15	25	279.43	269.43	9/19/2002
IW- 8	665426.73	1503670.51	289.25	291.06	20	10	20	281.06	271.06	9/19/2002
IW- 9	665496.39	1503522.29	289.8	291.36	30	20	30	271.36	261.36	9/19/2002
IW-10	665445.19	1503522.5	290.31	292.02	25	15	25	277.02	267.02	9/20/2002
IW-11	665344.3	1503520.45	297.95	299.56	30	20	30	279.56	269.56	9/20/2002
IW-12	665472.94	1503479.96	289.24	290.93	25	15	25	275.93	265.93	9/20/2002
IW-13	665340.37	1503464.01	297.96	299.6	30	20	30	279.6	269.6	9/20/2002
IW-14	665580.94	1503671.57	293.62	293.27	25	15	25	278.27	268.27	9/23/2002
IW-15	665479.9	1503671.67	291.07	292.96	25	15	25	277.96	267.96	9/23/2002
IW-16	665467.3	1503767.28	291.67	293.72	25	15	25	278.72	268.72	9/23/2002
IW-17	665563.21	1503596.56	293.51	293.09	30	15	30	278.09	263.09	4/5/2004
IW-18	665512.91	1503597.97	291.89		30	15	30	276.89	261.89	4/5/2004
IW-19	665459.54	1503605.37	289.74		30	15	30	274.74	259.74	4/5/2004
IW-20	665415.01	1503591.79	290.32		30	15	30	275.32	260.32	4/8/2004
IW-21	665632.82	1503671.34	294.21		35	20	35	274.21	259.21	4/6/2004

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
IW-22	665365.46	1503603.36	296.04		35	20	35	276.04	261.04	4/6/2004
IW-24	665598.66	1503520.38	293.23		40	25	40	268.23	253.23	4/7/2004
IW-25	665294.31	1503519.51	299.61		35	20	35	279.61	264.61	4/8/2004
IW-28	665666.57	1503442.3	293.38		40	25	40	268.38	253.38	4/7/2004
IW-29	665569.69	1503431.05	291.99		45	30	45	261.99	246.99	4/6/2004
IW-30	665485.52	1503413.29	288.99		30	15	30	273.99	258.99	4/6/2004
IW-31	665364.49	1503386.85	296.94		37	22	37	274.94	259.94	4/7/2004
JZ-01	659666	1504693	295.5	297.61	72.5	12.5	72.5	285.11	225.11	7/19/1983
LT- 2	670681	1509089	284.6	286.55	21.6	11.6	21.6	274.95	264.95	8/17/1993
LT- 3	670734	1506793	276.4	275.89	31	11	31	264.89	244.89	8/17/1993
LT- 4	670852	1505537	281.6	283.25	26.3	16.3	26.3	266.95	256.95	8/17/1993
LT- 5	670140	1504739	278.6	279.79	30.5	20.5	30.5	259.29	249.29	8/17/1993
LT- 6	668440	1503819	275	274.63	25	15	25	259.63	249.63	8/18/1993
LT- 7	666017	1503734	274	273.53	19	9	19	264.53	254.53	8/17/1993
LT- 8	660734	1509297	325.3	324.89	44.5	34.5	44.5	290.39	280.39	8/18/1993
LT- 9	661940	1507958	311.7	313.27	140	130	140	183.27	173.27	9/17/1993
LT-10	669713	1504250	274.9	274.39	24.5	14.5	24.5	259.89	249.89	9/20/1994
LT-11	667648	1503719	273.5	273.37	27.5	17.5	27.5	255.87	245.87	9/20/1994
MF-1	664418.35	1505134.83	280.11	279.62	19.5	4.5	19.5	275.12	260.12	12/18/2000
MF-2	664413.83	1505197.73	279.79	279.29	19.5	4.5	19.5	274.79	259.79	12/18/2000
MF-3	664485.87	1505135.34	280.32	279.99	19.5	4.5	19.5	275.49	260.49	12/18/2000
MF-4	664523.94	1505200.69	280.6	280.25	19.5	4.5	19.5	275.75	260.75	12/18/2000
MW-40	665329	1502172	291.98	294.04	70	60	70	234.04	224.04	1/29/1987
TW-09	666225.66	1505092.889	276.62	276.62	24.5	4.5	24.5	272.12	252.12	1/15/1996
UA-02	664750.37	1502512.89	292.2	293.56	37.7	17.7	37.7	275.86	255.86	3/8/1988
Wells Completed in the Sea Level Aquifer										
CW-14d	682970	1504381	306	305.71	275	265	275	40.71	30.71	11/23/1993
CW-15d	663982	1504574	293	292.67	265.4	255.4	265.4	37.27	27.27	11/5/1993
CW-18d	662559	1504949	310.2	309.74	330	320	330	-10.26	-20.26	12/8/1993
CW-31b	664888.82	1504246.75	296.58	296.29	196.5	186	196.5	110.29	99.79	7/18/1990

Appendix A - Well Inventory Output
(6 February 2015)
JBLM McChord Field

Well ID	North NAD27	East NAD27	Ground Elevation (ft/AMSL)	Measure Point Elevation (ft/AMSL)	Well Depth (ft/bgs)	Screen Top (ft/bgs)	Screen Bottom (ft/bgs)	Screen Top Elevation (ft/AMSL)	Screen Bottom Elevation (ft/AMSL)	Completion Date
CW-31c	664888.82	1504246.75	296.58	296.33	311	300.5	311	-4.17	-14.67	7/18/1990
CW-32b	666768.19	1504428.52	276.86	276.54	247	242	247	34.54	29.54	8/10/1990
CW-32c	666768.19	1504428.52	276.86	276.5	372.5	362	372.5	-85.5	-96	8/10/1990
CW-33d	660076	1505230	303.01	301.99	217	207	217	94.99	84.99	9/23/1994
CW-34d	658775	1505171	311.12	310.33	234	224	234	86.33	76.33	10/4/1994
DA- 2d	659250.18	1502671.78	300.2	300.79	202	192	202	108.79	98.79	4/4/1989
DA-12c	660599.77	1497486.34	273.4	274.19	230	220	230	54.19	44.19	4/4/1989
DA-12d	660599.77	1497486.34	273.4	274.19	305	295	305	-20.81	-30.81	4/4/1989

Notes:

ft/AMSL = Feet above mean sea level

ft/bgs = Feet below ground surface

APPENDIX B

FIELD DOCUMENTATION

This page intentionally left blank.

34 Location YTC Date 3.20.15

Project / Client

Cloudy 50F

0830 onsite, Tailgate, walkin for snakes, heavy lightning

0900 set up on MW-4
DTW - 85.23

0930 MW-4 sampled
MW-7 Dry
MW-5 Dry

1015 MW-6 DTW - 40.84

1110 ~~MW-8~~ FTP-15 DTW 17.91 TD 22.5

1125 FTP-14 DTW - 18.76 TD 22.60
Slight sheen

1145 FTP-16 DTW - 26.19 TD 32.30
pack Samples

35 Location JBLM Date 5-26-15

Project / Client Sunny 80F
Mike Baran D Ramquist

0730 onsite, tailgate, load equipment
Randy fm golf course stopped & showed us leak in 6H
? discharge pipe adj to trail along fairway - 2+ week leaking
called to M Ingersoll
0915 Meet Sweeny W/ Versar
will not be able to pump tarmac wells, cannot drive on

1000 DM-06 29.35 DTW

1020 GM-15-005

1025 GM-15-04 dup
UA-02 DTW 29.36 trace tph

1110 GM-15-006

1145 AZ-06 DTW - 24.16 (50.7 TD) trace

1215 GM-15-004
call to M. Ingersoll re: Wells on tarmac
CW-4 DTW - 20.16

1315 GM-15-001

CW-14b DTW - 27.93

1415 GM-15-008

DL 32615

36

Location JBLM Date 3.26.15

Project / Client

Sunny 70f

CW-9 DTW - 20.96

1500 GM-15-007

LT-6 DTW - 14.57

1545 GM-15-003

LT-4 DTW- 21.84

1620 GM-15-002

1700 GM-15-012 equipment blank

GM-15-013 Trip Blank

conduct TP inspection

1745 off site

PL

3.26.15

Location JBLM / 41C Date 6-21-15 37

Project / Client

6-21-15 called Manfield Tasto re: access & temp badge as well as notify for sampling 6129 + 6130

Location JBLM Date 6.23.15

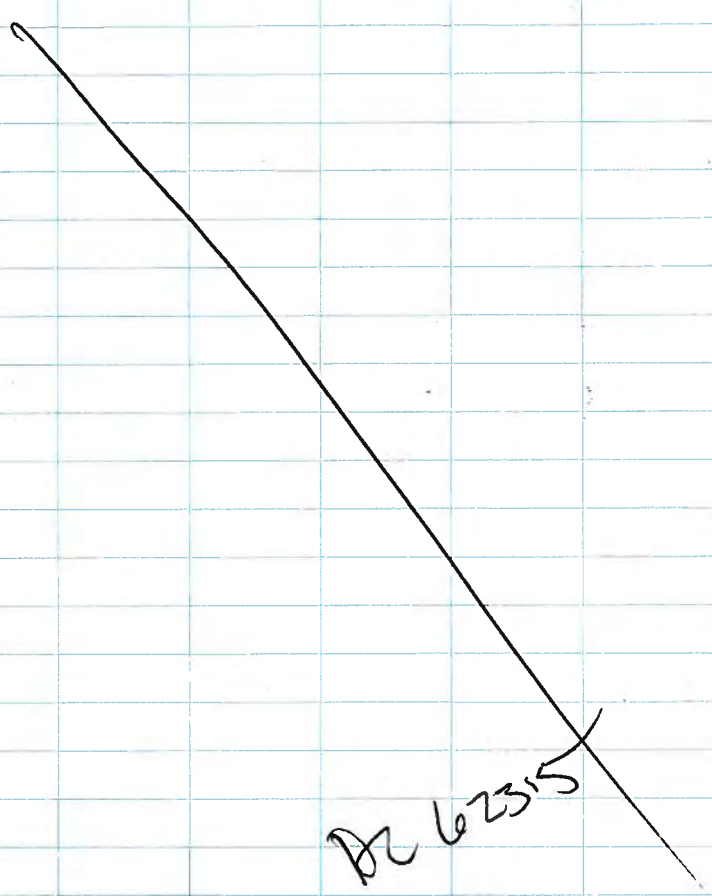
Project / Client

Mr Williams #1172

~~borer~~

Valarie Grendell re: escort

0900 #1172



DR 62315

Location JBLM Date 6.24.15

Project / Client DRamquist, M, Ingersoll

Sunny 75F

0730 at TP. re: heat

~~Sunny~~

0800 water levels

0900 ✓ w/ Ⓐ #1172 Valerie Grendell

TW-9 DTW - 11.70

0920 GM-15-010

CR-02 DTW - 8.15

0930 GM-15-009

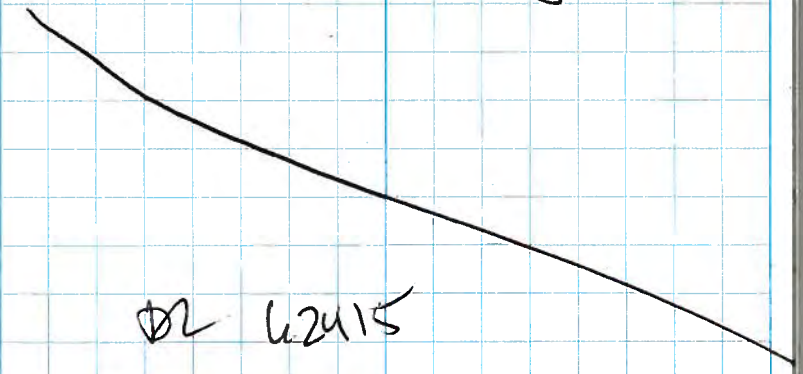
940 off airfield

1050 RI-15-040 equipment blank

water levels

Check in w/ Grace Ⓐ

Oaks West re: Aug. ISCO



DR 62415

WATER SAMPLING LOG

Project: JBLM
Well No.: AZ-OU Date Well Purged: 32615 Date Well Sampled: 32615

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 24.16 Purge Method: low flow

Water Sample Data

Sample Number: GWM-15-0004 Time Sample Collected: 1215
Sampling Method: BL + MB
Sampling Personnel: low flow
Remarks: trace

Checklist

- [x] Well capped and locked (pre-sampling) lower non-locking
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
3	1203	6.67	14.0	7.22	.231	139	130
6	1206	6.60	14.0	5.45	.186	143	137
9	1209	6.61	14.2	6.69	.127	124	140
12	1212	6.64	14.5	5.79	.200	125	72
15	1215	6.63	14.3	5.37	.188	132	100

WATER SAMPLING LOG

Project: JBL-M
Well No.: CW-4 Date Well Purged: 32615 Date Well Sampled: 32615

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 20.16 Purge Method: Low Flow

Water Sample Data

Sample Number: GM-15-001 Time Sample Collected: 1315
Sampling Method: Low Flow
Sampling Personnel: D Ramquist M Barar
Remarks:

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
5	1304	5.76	11.3	11.00	.069	256	72
8	1309	6.07	11.7	10.61	.067	226	45
11	1312	6.03	11.7	10.24	.066	231	30
14	1315	6.0	11.6	9.94	.064	238	24

WATER SAMPLING LOG

Project: JBLM
Well No.: CW-9 Date Well Purged: 3/26/15 Date Well Sampled: 3/26/15

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 20.96 Purge Method: low flow

Water Sample Data

Sample Number: GM-15-007 Time Sample Collected: 1500
Sampling Method: low flow
Sampling Personnel: DE + MB
Remarks:

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
4	1450	7.29	16.4	8.70	.222	121	77
7	1454	7.12	16.3	7.78	.223	127	36
10	1457	7.17	16.4	7.69	.221	140	14
13	1500	6.96	16.4	6.35	.217	142	13

WATER SAMPLING LOG

Project: JBLM
Well No.: CW-14D Date Well Purged: 3/26/15 Date Well Sampled: 3/26/15

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 27.93 Purge Method: low flow

Water Sample Data

Sample Number: LM-15-08 Time Sample Collected: 1415
Sampling Method: low flow
Sampling Personnel: DZ + MB
Remarks:

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
3	1403	7.04	15.6	8.71	.284	10	48
6	1406	7.12	15.1	8.18	.287	-6	46
9	1409	7.28	14.8	6.26	.353	-46	33
12	1412	7.42	14.9	5.69	.367	-62	18
15	1415	7.49	14.9	5.35	.382	-70	13

WATER SAMPLING LOG

Project: JBLM
Well No.: GM-06 Date Well Purged: 32615 Date Well Sampled: 32615

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 29.35 Purge Method: low flow

Water Sample Data

Sample Number: GM-15-005 Time Sample Collected: 1020
Sampling Method: low flow
Sampling Personnel: DR + MB
Remarks: GM-15-011 dup 1025

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
3	1014	6.37	13.8	4.51	.129	208	72
6	1017	6.38	13.8	4.02	.130	217	86
9	1020	6.39	14.1	3.89	.133	221	37

WATER SAMPLING LOG

Project: JBLM
Well No.: LT-4 Date Well Purged: 3.26.15 Date Well Sampled: 3.26.15

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 21.84 Purge Method: low flow

Water Sample Data

Sample Number: bm-15-002 Time Sample Collected: 1620
Sampling Method: low flow
Sampling Personnel: DRamquist / MBarcus
Remarks:

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
6	1614	6.36	14.5	11.29	.106	198	240
9	1617	6.35	15.3	9.95	.106	202	110
12	1620	6.35	14.2	9.21	.104	192	73

WATER SAMPLING LOG

Project: JBLM
Well No.: LT-6 Date Well Purged: 3/26/15 Date Well Sampled: 3/26/15

Well Data

Measuring Point (MP): Top of Casing
Depth to Water Below MP: 14.57 Purge Method: low flow

Water Sample Data

Sample Number: GM-15-004 Time Sample Collected: 1545
Sampling Method: low flow
Sampling Personnel: DL + MD
Remarks:

Checklist

- [x] Well capped and locked (pre-sampling)
- [x] Water level measured
- [x] Appropriate sample containers filled and capped
- [x] Samples placed in cooler with blue ice
- [x] Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
6	1539	7.0	14.3	10.05	.151	149	290
9	1542	6.81	13.6	10.0	.134	156	180
12	1545	6.72	13.5	9.78	.139	164	98

WATER SAMPLING LOG

Project: JBLM

Well No.: MA-2 Date Well Purged: 3/26/15 Date Well Sampled: 3/26/15

Well Data

Measuring Point (MP): Top of Casing

Depth to Water Below MP: 29.36 Purge Method: Low Flow

Water Sample Data

Sample Number: JBLM-15-006 Time Sample Collected: 1110

Sampling Method: Low Flow

Sampling Personnel: DE & MB

Remarks:

Checklist

☑ Well capped and locked (pre-sampling)

☑ Water level measured

☑ Appropriate sample containers filled and capped

☑ Samples placed in cooler with blue ice

☑ Well capped and locked (post-sampling)

Liters Out	Time	PH	Temp	DO	Spec. Cond.	ORP	Turb
3	1104	6.26	12.4	3.83	.123	215	26
6	1107	6.23	12.5	3.16	.122	218	18
9	1110	6.19	12.5	2.50	.121	223	13

APPENDIX C

LABORATORY REPORTS

This page intentionally left blank.

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

May 01, 2015 **Analytical Report for Service Request No:** K1503195

Scott Elkind
Sealaska Environmental Services, LLC
18743 Front Street NE
P.O. Box 869
Poulsbo, WA 98370

RE: JBLM / 106-45760003

Dear Scott,

Enclosed are the results of the sample(s) submitted to our laboratory March 28, 2015
For your reference, these analyses have been assigned our service request number **K1503195.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services
Manager

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Sealaska Environmental Services, LLC	**Service Request No.:**	K1503195
Project:	JBLM/ 106-45760003	**Date Received:**	03/28/15
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Eleven water samples were received for analysis at ALS Environmental on 03/28/15. The samples were received in good condition and consistent with the accompanying chain of custody form, except where noted on the cooler receipt and preservation form included in this report. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel and Residual Range Organics in samples Batch QC were not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Gasoline Range Organics-NWTPH in sample GM-15-004 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

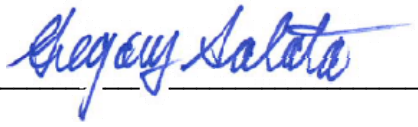
Volatile Organic Compounds by EPA Method 8260

Calibration Verification Exceptions:
The following analyte was flagged as outside the control criterion for Continuing Calibration Verification (CCV) MS13\0403F003.D: 2,2-Dichloropropane, trans-1,3-Dichloropropene and Bromoform. In accordance with the EPA Method, 80% or more of the CCV analytes must pass within 20% of the true value. The ALS SOP allows for 40% difference for the remaining analytes. The CCV met these criteria. The quality of the sample data was not significantly affected. No further corrective action was required.

Lab Control Sample Exceptions:
The control criterion was exceeded for 2,2-Dichloropropane in Laboratory Control Sample (LCS) KWG1502833-3. The recovery was within the marginal excceedance limits listed in DOD Quality Systems Manual 4.2. The data was flagged to indicate the issue. No further corrective action was required.

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks was required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. Refer to the raw data for the compounds impacted by the manual integration.

No other anomalies associated with the analysis of these samples were observed.

Approved by 

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Environmental

CHAIN OF CUSTODY
58249

001

SR#_____

COC Set 1 of 2

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

KI503195

Project Name	Project Number
JBLM	106-457600003
Project Manager	
Mark Ingersoll	
Company	
Tetra Tech	
Address	
19803 North Creek Pkwy, Bothell WA	
Phone #	email
406-270-6339	mark.ingersoll@tetratech.com
Sampler Signature	Sampler Printed Name
Dana Ramquist	Dana Ramquist

CLIENT SAMPLE ID	LABID	SAMPLING Date	Time	Matrix	NUMBER OF CONTAINERS	14D NWTPH-Dx/NW_TPH/HD	NWTPH-Gx/NW_GAS	1 VOCs Full	2 BTEX	3	4	5	Remarks
1. GM-15-001		32615	1315	W	3			X					
2. GM-15-002		32615	1620	W	3			X					
3. GM-15-003		32615	1545	W	3			X					
4. GM-15-004		32615	1215	W	8	X	X		X				
5. GM-15-005		32615	1020	W	8	X	X		X				
6. GM-15-006		32615	1110	W	8	X	X		X				
7. GM-15-007		32615	1500	W	8	X	X		X				
8. GM-15-008		32615	1415	W	8	X	X		X				
9. GM-15-011		32615	1025	W	8	X	X		X				
10. GM-15-012		32615	1700	W	8	X	X		X				

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

✓ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

✓ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments: *Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

2 coolers

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Dana Ramquist	Signature	Signature	Signature	Signature	Signature
Printed Name: Dana Ramquist	Printed Name	Printed Name	Printed Name: GLS	Printed Name	Printed Name
Firm: TtEC	Firm: FedEx	Firm	Firm: 3/28/15 0940	Firm	Firm
Date/Time: 3.27.15/1100	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

ALS Environmental

CHAIN OF CUSTODY
58249

001

SR#_____

COC Set 1 of 2

COC#_____

1317 South 13th Ave, Kelso, WA 98626 Phone (360) 577-7222 / 800-695-7222 / FAX (360) 636-1068
www.alsglobal.com

KI503195

Project Name: JBLM	Project Number: 106-215760003
Project Manager: Mark Ingersoll	
Company: Tetra Tech	
Address: 19803 North Creek Pky Bothell, WA	
Phone #: 406-270-6339	email: mark.ingersoll@ktrtech.com
Sampler Signature:	Sampler Printed Name: Dana Ramquist

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	14D NWTPH-Dx/NW_TPH/HO	NWTPH-Gx/NW_GAS	1 VOCs	2 BTEX	3	4	5	Remarks
1. GM-15-013		3/26/15	—	W	3		X		X				Trip Blank
2. Temp Blank				W	1								
3.													
4.													
5.													
6.													
7.		DR	3/26/15										
8.													
9.													
10.													

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

✓ IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.#_____

Bill To:_____

Turnaround Requirements

___ 24 hr. ___ 48 hr.

___ 5 Day

✓ Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature	Signature	Signature	Signature	Signature	Signature
Printed Name: Dana Ramquist	Printed Name	Printed Name: AES	Printed Name	Printed Name	Printed Name
Firm: TtEC	Firm: Fed Ex	Firm: 3/28/15 0940	Firm	Firm	Firm
Date/Time: 3/27/15/1100	Date/Time	Date/Time	Date/Time	Date/Time	Date/Time

PC 65

Cooler Receipt and Preservation Form

Client TETRA TECH Service Request K15 03195

Received: 3/28/15 Opened: 3/28/15 By: AR Unloaded: 3/28/15 By: AR

1. Samples were received via? *Mail* ~~*Fed Ex*~~ *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1F 1B
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
0.7	0.9	0.7	0.9	0.2	308		803275515402	
1.4	1.3	3.8	3.7	-0.1	359		803275515413	

4. Packing material: ~~*Inserts*~~ ~~*Baggies*~~ *Bubble Wrap* *Gel Packs* ~~*Wet Ice*~~ *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y (N)
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA (Y) N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
GM-15-004	GM-15-003	TIME

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
GM-15-006	1 VOA			X						
GM-15-005	1 VOA			X						

Notes, Discrepancies, & Resolutions: _____

Page ____ *of* ____

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1503195
Project: JBLM/106-45760003

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
GM-15-004	K1503195-004	03/26/2015	03/28/2015
GM-15-005	K1503195-005	03/26/2015	03/28/2015
GM-15-006	K1503195-006	03/26/2015	03/28/2015
GM-15-007	K1503195-007	03/26/2015	03/28/2015
GM-15-008	K1503195-008	03/26/2015	03/28/2015
GM-15-011	K1503195-009	03/26/2015	03/28/2015
GM-15-012	K1503195-010	03/26/2015	03/28/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-004	**Units:**	ug/L
Lab Code:	K1503195-004	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**280**	Y	110	21	12	1	04/07/15	04/20/15	KWG1502945	
Residual Range Organics (RRO)	**150**	L	110	53	20	1	04/07/15	04/20/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	04/20/15	Acceptable
n-Triacontane	104	50-150	04/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-005	**Units:**	ug/L
Lab Code:	K1503195-005	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**32**	J	100	20	11	1	04/07/15	04/20/15	KWG1502945	
Residual Range Organics (RRO)	**64**	J	100	50	19	1	04/07/15	04/20/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	104	50-150	04/20/15	Acceptable
n-Triacontane	108	50-150	04/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-006	**Units:**	ug/L
Lab Code:	K1503195-006	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**23**	J	110	21	12	1	04/07/15	04/20/15	KWG1502945	
Residual Range Organics (RRO)	**100**	J	110	53	20	1	04/07/15	04/20/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	50-150	04/20/15	Acceptable
n-Triacontane	87	50-150	04/20/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-007	**Units:**	ug/L
Lab Code:	K1503195-007	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**37**	J	100	20	11	1	04/07/15	04/21/15	KWG1502945	
Residual Range Organics (RRO)	**57**	J	100	50	19	1	04/07/15	04/21/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	99	50-150	04/21/15	Acceptable
n-Triacontane	101	50-150	04/21/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-008	**Units:**	ug/L
Lab Code:	K1503195-008	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**2700**	Y	100	20	11	1	04/07/15	04/21/15	KWG1502945	
Residual Range Organics (RRO)	**520**	L	100	50	19	1	04/07/15	04/21/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	103	50-150	04/21/15	Acceptable
n-Triacontane	106	50-150	04/21/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-011	**Units:**	ug/L
Lab Code:	K1503195-009	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**39**	J	100	20	11	1	04/07/15	04/21/15	KWG1502945	
Residual Range Organics (RRO)	**100**	J	100	50	19	1	04/07/15	04/21/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	108	50-150	04/21/15	Acceptable
n-Triacontane	114	50-150	04/21/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-012	**Units:**	ug/L
Lab Code:	K1503195-010	**Basis:**	NA
Extraction Method:	EPA 3510C	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**14**	J	100	20	11	1	04/07/15	04/20/15	KWG1502945	
Residual Range Organics (RRO)	**31**	J	100	50	19	1	04/07/15	04/20/15	KWG1502945	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	78	50-150	04/20/15	Acceptable
n-Triacontane	84	50-150	04/20/15	Acceptable

Comments:

Gasoline Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1503195
Project: JBLM/106-45760003

Cover Page - Organic Analysis Data Package
Gasoline Range Organics

Sample Name	Lab Code	Date Collected	Date Received
GM-15-004	K1503195-004	03/26/2015	03/28/2015
GM-15-005	K1503195-005	03/26/2015	03/28/2015
GM-15-006	K1503195-006	03/26/2015	03/28/2015
GM-15-007	K1503195-007	03/26/2015	03/28/2015
GM-15-008	K1503195-008	03/26/2015	03/28/2015
GM-15-011	K1503195-009	03/26/2015	03/28/2015
GM-15-012	K1503195-010	03/26/2015	03/28/2015
GM-15-013	K1503195-011	03/26/2015	03/28/2015
GM-15-004	KWG1502850-1	03/26/2015	03/28/2015

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-004	**Units:**	ug/L
Lab Code:	K1503195-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**190**	JY	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-005	**Units:**	ug/L
Lab Code:	K1503195-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	92	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-006	**Units:**	ug/L
Lab Code:	K1503195-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	96	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-007	**Units:**	ug/L
Lab Code:	K1503195-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	97	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-008	**Units:**	ug/L
Lab Code:	K1503195-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	**110**	JY	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-011	**Units:**	ug/L
Lab Code:	K1503195-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	95	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-012	**Units:**	ug/L
Lab Code:	K1503195-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	94	50-150	03/31/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Gasoline Range Organics

Sample Name:	GM-15-013	**Units:**	ug/L
Lab Code:	K1503195-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	250	25	13	1	03/30/15	03/31/15	KWG1502850	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,4-Difluorobenzene	98	50-150	03/31/15	Acceptable

Comments:

Volatile Organic Compounds

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Sealaska Environmental Services, LLC **Service Request:** K1503195
Project: JBLM/106-45760003

Cover Page - Organic Analysis Data Package
Volatile Organic Compounds

Sample Name	Lab Code	Date Collected	Date Received
GM-15-001	K1503195-001	03/26/2015	03/28/2015
GM-15-002	K1503195-002	03/26/2015	03/28/2015
GM-15-003	K1503195-003	03/26/2015	03/28/2015
GM-15-004	K1503195-004	03/26/2015	03/28/2015
GM-15-005	K1503195-005	03/26/2015	03/28/2015
GM-15-006	K1503195-006	03/26/2015	03/28/2015
GM-15-007	K1503195-007	03/26/2015	03/28/2015
GM-15-008	K1503195-008	03/26/2015	03/28/2015
GM-15-011	K1503195-009	03/26/2015	03/28/2015
GM-15-012	K1503195-010	03/26/2015	03/28/2015
GM-15-013	K1503195-011	03/26/2015	03/28/2015
GM-15-004MS	KWG1502833-1	03/26/2015	03/28/2015
GM-15-004DMS	KWG1502833-2	03/26/2015	03/28/2015

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-001
Lab Code: K1503195-001

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
Chloromethane	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/03/15	04/03/15	KWG1502833	
Bromomethane	ND	U	0.50	0.30	0.10	1	04/03/15	04/03/15	KWG1502833	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Trichlorofluoromethane	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/03/15	04/03/15	KWG1502833	
Acetone	ND	U	20	10	3.3	1	04/03/15	04/03/15	KWG1502833	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/03/15	04/03/15	KWG1502833	
2,2-Dichloropropane	ND	U	0.50	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	*
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/03/15	04/03/15	KWG1502833	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	04/03/15	04/03/15	KWG1502833	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Chloroform	ND	U	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/03/15	04/03/15	KWG1502833	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/03/15	04/03/15	KWG1502833	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/03/15	04/03/15	KWG1502833	
Dibromomethane	ND	U	0.50	0.50	0.15	1	04/03/15	04/03/15	KWG1502833	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/03/15	04/03/15	KWG1502833	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/03/15	04/03/15	KWG1502833	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/03/15	04/03/15	KWG1502833	
Toluene	ND	U	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	*
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/03/15	04/03/15	KWG1502833	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/03/15	04/03/15	KWG1502833	
2-Hexanone	ND	U	20	10	2.7	1	04/03/15	04/03/15	KWG1502833	

Comments:

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-001
Lab Code: K1503195-001

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/03/15	04/03/15	KWG1502833	
Dibromochloromethane	ND	U	0.50	0.50	0.14	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	
Styrene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Bromoform	ND	U	0.50	0.50	0.16	1	04/03/15	04/03/15	KWG1502833	*
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	04/03/15	04/03/15	KWG1502833	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichloropropane	ND	U	0.50	0.50	0.20	1	04/03/15	04/03/15	KWG1502833	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
4-Chlorotoluene	ND	U	2.0	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Butylbenzene	ND	U	2.0	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.80	0.20	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/03/15	04/03/15	KWG1502833	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
Naphthalene	ND	U	2.0	0.30	0.088	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/03/15	04/03/15	KWG1502833	

* See Case Narrative

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-001	**Units:**	ug/L
Lab Code:	K1503195-001	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	91	85-115	04/03/15	Acceptable
1,2-Dichloroethane-d4	105	70-120	04/03/15	Acceptable
Toluene-d8	94	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	89	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-002
Lab Code: K1503195-002

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
Chloromethane	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/03/15	04/03/15	KWG1502833	
Bromomethane	ND	U	0.50	0.30	0.10	1	04/03/15	04/03/15	KWG1502833	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Trichlorofluoromethane	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/03/15	04/03/15	KWG1502833	
Acetone	ND	U	20	10	3.3	1	04/03/15	04/03/15	KWG1502833	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/03/15	04/03/15	KWG1502833	
2,2-Dichloropropane	ND	U	0.50	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	*
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/03/15	04/03/15	KWG1502833	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	04/03/15	04/03/15	KWG1502833	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Chloroform	ND	U	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/03/15	04/03/15	KWG1502833	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/03/15	04/03/15	KWG1502833	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/03/15	04/03/15	KWG1502833	
Dibromomethane	ND	U	0.50	0.50	0.15	1	04/03/15	04/03/15	KWG1502833	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/03/15	04/03/15	KWG1502833	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/03/15	04/03/15	KWG1502833	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.25**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	*
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/03/15	04/03/15	KWG1502833	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/03/15	04/03/15	KWG1502833	
2-Hexanone	ND	U	20	10	2.7	1	04/03/15	04/03/15	KWG1502833	

Comments:

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-002
Lab Code: K1503195-002

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/03/15	04/03/15	KWG1502833	
Dibromochloromethane	ND	U	0.50	0.50	0.14	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	
Styrene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Bromoform	ND	U	0.50	0.50	0.16	1	04/03/15	04/03/15	KWG1502833	*
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	04/03/15	04/03/15	KWG1502833	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichloropropane	ND	U	0.50	0.50	0.20	1	04/03/15	04/03/15	KWG1502833	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
4-Chlorotoluene	ND	U	2.0	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Butylbenzene	ND	U	2.0	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.80	0.20	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/03/15	04/03/15	KWG1502833	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
Naphthalene	ND	U	2.0	0.30	0.088	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/03/15	04/03/15	KWG1502833	

* See Case Narrative

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-002	**Units:**	ug/L
Lab Code:	K1503195-002	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	85-115	04/03/15	Acceptable
1,2-Dichloroethane-d4	109	70-120	04/03/15	Acceptable
Toluene-d8	95	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	93	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-003
Lab Code: K1503195-003

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Dichlorodifluoromethane	ND	U	0.50	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
Chloromethane	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	
Vinyl Chloride	ND	U	0.50	0.10	0.075	1	04/03/15	04/03/15	KWG1502833	
Bromomethane	ND	U	0.50	0.30	0.10	1	04/03/15	04/03/15	KWG1502833	
Chloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Trichlorofluoromethane	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethene	ND	U	0.50	0.20	0.080	1	04/03/15	04/03/15	KWG1502833	
Acetone	ND	U	20	10	3.3	1	04/03/15	04/03/15	KWG1502833	
Carbon Disulfide	ND	U	0.50	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
Methylene Chloride	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Methyl tert-Butyl Ether	ND	U	0.50	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
trans-1,2-Dichloroethene	ND	U	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloroethane	ND	U	0.50	0.20	0.077	1	04/03/15	04/03/15	KWG1502833	
2,2-Dichloropropane	ND	U	0.50	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	*
cis-1,2-Dichloroethene	ND	U	0.50	0.20	0.067	1	04/03/15	04/03/15	KWG1502833	
2-Butanone (MEK)	ND	U	20	4.0	1.9	1	04/03/15	04/03/15	KWG1502833	
Bromochloromethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Chloroform	**0.23**	J	0.50	0.20	0.072	1	04/03/15	04/03/15	KWG1502833	
1,1,1-Trichloroethane (TCA)	ND	U	0.50	0.20	0.075	1	04/03/15	04/03/15	KWG1502833	
Carbon Tetrachloride	ND	U	0.50	0.20	0.096	1	04/03/15	04/03/15	KWG1502833	
1,1-Dichloropropene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloroethane (EDC)	ND	U	0.50	0.15	0.080	1	04/03/15	04/03/15	KWG1502833	
Trichloroethene (TCE)	ND	U	0.50	0.10	0.10	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichloropropane	ND	U	0.50	0.20	0.095	1	04/03/15	04/03/15	KWG1502833	
Dibromomethane	ND	U	0.50	0.50	0.15	1	04/03/15	04/03/15	KWG1502833	
Bromodichloromethane	ND	U	0.50	0.30	0.091	1	04/03/15	04/03/15	KWG1502833	
cis-1,3-Dichloropropene	ND	U	0.50	0.20	0.18	1	04/03/15	04/03/15	KWG1502833	
4-Methyl-2-pentanone (MIBK)	ND	U	20	10	2.6	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.090**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
trans-1,3-Dichloropropene	ND	U	0.50	0.20	0.068	1	04/03/15	04/03/15	KWG1502833	*
1,1,2-Trichloroethane	ND	U	0.50	0.40	0.14	1	04/03/15	04/03/15	KWG1502833	
Tetrachloroethene (PCE)	ND	U	0.50	0.20	0.099	1	04/03/15	04/03/15	KWG1502833	
2-Hexanone	ND	U	20	10	2.7	1	04/03/15	04/03/15	KWG1502833	

Comments:

Analytical Results

Client: Sealaska Environmental Services, LLC
Project: JBLM/106-45760003
Sample Matrix: Water

Service Request: K1503195
Date Collected: 03/26/2015
Date Received: 03/28/2015

Volatile Organic Compounds

Sample Name: GM-15-003
Lab Code: K1503195-003

Extraction Method: EPA 5030B
Analysis Method: 8260C

Units: ug/L
Basis: NA

Level: Low

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
1,3-Dichloropropane	ND	U	0.50	0.30	0.14	1	04/03/15	04/03/15	KWG1502833	
Dibromochloromethane	ND	U	0.50	0.50	0.14	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromoethane (EDB)	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
Chlorobenzene	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
1,1,1,2-Tetrachloroethane	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	
Styrene	ND	U	0.50	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
Bromoform	ND	U	0.50	0.50	0.16	1	04/03/15	04/03/15	KWG1502833	*
Isopropylbenzene	ND	U	2.0	0.20	0.051	1	04/03/15	04/03/15	KWG1502833	
1,1,2,2-Tetrachloroethane	ND	U	0.50	0.20	0.16	1	04/03/15	04/03/15	KWG1502833	
Bromobenzene	ND	U	2.0	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Propylbenzene	ND	U	2.0	0.20	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichloropropane	ND	U	0.50	0.50	0.20	1	04/03/15	04/03/15	KWG1502833	
2-Chlorotoluene	ND	U	2.0	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,3,5-Trimethylbenzene	ND	U	2.0	0.20	0.089	1	04/03/15	04/03/15	KWG1502833	
4-Chlorotoluene	ND	U	2.0	0.20	0.13	1	04/03/15	04/03/15	KWG1502833	
tert-Butylbenzene	ND	U	2.0	0.20	0.059	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trimethylbenzene	ND	U	2.0	0.20	0.069	1	04/03/15	04/03/15	KWG1502833	
sec-Butylbenzene	ND	U	2.0	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
4-Isopropyltoluene	ND	U	2.0	0.20	0.060	1	04/03/15	04/03/15	KWG1502833	
1,3-Dichlorobenzene	ND	U	0.50	0.20	0.10	1	04/03/15	04/03/15	KWG1502833	
1,4-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
n-Butylbenzene	ND	U	2.0	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
1,2-Dichlorobenzene	ND	U	0.50	0.20	0.12	1	04/03/15	04/03/15	KWG1502833	
1,2-Dibromo-3-chloropropane	ND	U	2.0	0.80	0.20	1	04/03/15	04/03/15	KWG1502833	
1,2,4-Trichlorobenzene	ND	U	2.0	0.30	0.096	1	04/03/15	04/03/15	KWG1502833	
Hexachlorobutadiene	ND	U	2.0	0.30	0.11	1	04/03/15	04/03/15	KWG1502833	
Naphthalene	ND	U	2.0	0.30	0.088	1	04/03/15	04/03/15	KWG1502833	
1,2,3-Trichlorobenzene	ND	U	2.0	0.40	0.11	1	04/03/15	04/03/15	KWG1502833	

* See Case Narrative

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-003	**Units:**	ug/L
Lab Code:	K1503195-003	**Basis:**	NA

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Dibromofluoromethane	93	85-115	04/03/15	Acceptable
1,2-Dichloroethane-d4	110	70-120	04/03/15	Acceptable
Toluene-d8	96	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	88	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-004	**Units:**	ug/L
Lab Code:	K1503195-004	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	ND	U	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	107	70-120	04/03/15	Acceptable
Dibromofluoromethane	94	85-115	04/03/15	Acceptable
Toluene-d8	97	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	88	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-005	**Units:**	ug/L
Lab Code:	K1503195-005	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.13**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	107	70-120	04/03/15	Acceptable
Dibromofluoromethane	92	85-115	04/03/15	Acceptable
Toluene-d8	95	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	88	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-006	**Units:**	ug/L
Lab Code:	K1503195-006	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	ND	U	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	110	70-120	04/03/15	Acceptable
Dibromofluoromethane	92	85-115	04/03/15	Acceptable
Toluene-d8	95	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	91	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-007	**Units:**	ug/L
Lab Code:	K1503195-007	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.22**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	111	70-120	04/03/15	Acceptable
Dibromofluoromethane	94	85-115	04/03/15	Acceptable
Toluene-d8	96	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	91	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-008	**Units:**	ug/L
Lab Code:	K1503195-008	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	**0.11**	J	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.070**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	111	70-120	04/03/15	Acceptable
Dibromofluoromethane	95	85-115	04/03/15	Acceptable
Toluene-d8	96	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	90	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-011	**Units:**	ug/L
Lab Code:	K1503195-009	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.26**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	110	70-120	04/03/15	Acceptable
Dibromofluoromethane	93	85-115	04/03/15	Acceptable
Toluene-d8	96	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	91	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-012	**Units:**	ug/L
Lab Code:	K1503195-010	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	**0.15**	J	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	108	70-120	04/03/15	Acceptable
Dibromofluoromethane	92	85-115	04/03/15	Acceptable
Toluene-d8	96	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	87	75-120	04/03/15	Acceptable

Comments:

Analytical Results

Client:	Sealaska Environmental Services, LLC	**Service Request:**	K1503195
Project:	JBLM/106-45760003	**Date Collected:**	03/26/2015
Sample Matrix:	Water	**Date Received:**	03/28/2015

Volatile Organic Compounds

Sample Name:	GM-15-013	**Units:**	ug/L
Lab Code:	K1503195-011	**Basis:**	NA
Extraction Method:	EPA 5030B	**Level:**	Low
Analysis Method:	8260C		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Benzene	ND	U	0.50	0.10	0.062	1	04/03/15	04/03/15	KWG1502833	
Toluene	ND	U	0.50	0.10	0.054	1	04/03/15	04/03/15	KWG1502833	
Ethylbenzene	ND	U	0.50	0.10	0.050	1	04/03/15	04/03/15	KWG1502833	
m,p-Xylenes	ND	U	0.50	0.20	0.11	1	04/03/15	04/03/15	KWG1502833	
o-Xylene	ND	U	0.50	0.20	0.074	1	04/03/15	04/03/15	KWG1502833	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
1,2-Dichloroethane-d4	106	70-120	04/03/15	Acceptable
Dibromofluoromethane	92	85-115	04/03/15	Acceptable
Toluene-d8	94	85-120	04/03/15	Acceptable
4-Bromofluorobenzene	87	75-120	04/03/15	Acceptable

Comments:

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

July 27, 2015

Analytical Report for Service Request No: K1506912

Keir Craigie
Tetra Tech, Inc.
19803 North Creek Parkway
Bothell, WA 98011

RE: JBLM / 1064576003

Dear Keir,

Enclosed are the results of the sample(s) submitted to our laboratory June 25, 2015
For your reference, these analyses have been assigned our service request number **K1506912.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3376. You may also contact me via email at gregory.salata@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Gregory Salata, Ph.D.
Client Services
Manager

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

Case Narrative

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS ENVIRONMENTAL

Client:	Tetra Tech, Incorporated	**Service Request No.:**	K1506912
Project:	JBLM/ 1064576003	**Date Received:**	06/25/15
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at ALS Environmental on 06/25/15. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Diesel Range Organics by Method NWTPH-Dx

Sample Notes and Discussion:
Manual integration of one or more chromatographic peaks required to correct the integration performed by the automated data processing program. The manual integration was performed in accordance with ALS policy, which is consistent with the National Environmental Laboratory Accreditation Program (NELAP), Department of Defense (DOD), and other certifying agencies. The analytes that required manual integrations are identified on each sample report contained in this data package.

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

CHAIN OF CUSTODY

ALS Environmental

1317 South 13th Ave., Kelso, WA 98626 | 360.577.7222 | 800.695.7222 | 360.636.1068 (fax)

SR# 415061912

PAGE 1 OF 1 COC#

PROJECT NAME: JBLM
PROJECT NUMBER: 10x4576005
PROJECT MANAGER: Mark Ingersoll
COMPANY NAME: Tetra Tech
ADDRESS: 19803 North Creek Parkway
CITY STATE ZIP: Bothell, WA 98011
E-MAIL ADDRESS: mark.ingersoll@tetratech.com
PHONE # FAX #
SAMPLER'S SIGNATURE: Dana Lennox

SAMPLE I.D.	DATE	TIME	LAB I.D.	MATRIX	NUMBER OF CONTAINERS	Semivolatile Organics by GC/MS 625☐ 8270☐ 8270LL☐ SIM PAH☐	Volatile Organics 624☐ 8260☐	Hydrocarbons (*see below) Gas☐ Diesel☐ Oil☐	Oil & Grease/TPHT 1664 HEM☐ 1664 SGT☐	PCBs Aroclors☐ Congeners☐	Pesticides/Herbicides 608☐ 8081☐ 8141☐ 8151☐	Chlorophenolics Tri☐ Tetra☐ PCP☐	Metals, Total or Dissolved (See List below)	Cyanide☐ Hex-Chrom☐	(circle) pH, Cond., Cl, SO_4, PO_4, F, NO_2, NO_3, BOD, TSS, TDS, Turb.	(circle) NH_3-N, COD, TKN, TOC, DOC, NO_2+NO_3, T-Phos	TOX 9020☐ AOX 1650☐ 506☐	Alkalinity ☐ CO_3☐ HCO_3☐	Dioxins/Furans 1613☐ 8290☐	Dissolved Gases CO_2☐ RSK 175☐ Methane☐ Ethane☐ Ethene☐				REMARKS
BM-15-009	6/24/15	0930		W	2				X																CE-02
GM-15-010	6/24/15	0920		W	2				X																TW-9

TPH

REPORT REQUIREMENTS

___ I. Routine Report: Method Blank, Surrogate, as required
___ II. Report Dup., MS, MSD as required
___ III. CLP Like Summary (no raw data)
__/__ IV. Data Validation Report
___ V. EDD

INVOICE INFORMATION

P.O. # _____
Bill To: _____

TURNAROUND REQUIREMENTS

____ 24 hr. ____ 48 hr.
____ 5 day
____ Standard (15 working days)
____ Provide FAX Results

Requested Report Date

Circle which metals are to be analyzed:

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

*INDICATE STATE HYDROCARBON PROCEDURE: AK CA WI NORTHWEST OTHER: _____ (CIRCLE ONE)

SPECIAL INSTRUCTIONS/COMMENTS:

☐ Sample Shipment contains USDA regulated soil samples (check box if applicable)

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: [signature]	Signature: Fed Ex	Signature:	Signature: [signature]
Date/Time: 6/24/15/1600	Date/Time:	Date/Time:	Date/Time: 6/25/15 0920
Printed Name: Dana Lennox	Printed Name:	Printed Name:	Printed Name: K Smith
Firm: TEEC	Firm:	Firm:	Firm: ALS

PC Greg

Cooler Receipt and Preservation Form

Client / Project: TetraTech Service Request K15 0691 2

Received: 6/25/15 Opened: 6/25/15 By: HO Unloaded: 6/25/15 By: HO

1. Samples were received via? *Mail* (*Fed Ex*) *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) (*Cooler*) *Box* *Envelope* *Other*_____ *NA*
3. Were custody seals on coolers? NA (Y) N If yes, how many and where? 1, Front 1, Back
   If present, were custody seals intact? (Y) N If present, were they signed and dated? (Y) N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID (NA)	Tracking Number NA	Filed
.3	.2	4.1	4.0	-.1	328		8064 5165 7041	

4. Packing material: *Inserts* (*Baggies*) (*Bubble Wrap*) (*Gel Packs*) *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA (Y) N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA (Y) N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA (Y) N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA (Y) N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA (Y) N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* (NA) Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* (NA) Y N
12. Was C12/Res negative? (NA) Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Page____ of____

Diesel and Residual Range Organics

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Client: Tetra Tech, Incorporated **Service Request:** K1506912
Project: JBLM/1064576003

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
GM-15-009	K1506912-001	06/24/2015	06/25/2015
GM-15-010	K1506912-002	06/24/2015	06/25/2015

Analytical Results

Client:	Tetra Tech, Incorporated	**Service Request:**	K1506912
Project:	JBLM/1064576003	**Date Collected:**	06/24/2015
Sample Matrix:	Water	**Date Received:**	06/25/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-009	**Units:**	ug/L
Lab Code:	K1506912-001	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**1900**	Y	260	21	12	1	07/07/15	07/09/15	KWG1506110	
Residual Range Organics (RRO)	**470**	J	520	52	20	1	07/07/15	07/09/15	KWG1506110	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	50-150	07/09/15	Acceptable
n-Triacontane	71	50-150	07/09/15	Acceptable

Comments:

Analytical Results

Client:	Tetra Tech, Incorporated	**Service Request:**	K1506912
Project:	JBLM/1064576003	**Date Collected:**	06/24/2015
Sample Matrix:	Water	**Date Received:**	06/25/2015

Diesel and Residual Range Organics

Sample Name:	GM-15-010	**Units:**	ug/L
Lab Code:	K1506912-002	**Basis:**	NA
Extraction Method:	METHOD	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	LOQ	LOD	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	**970**	Y	280	22	12	1	07/07/15	07/09/15	KWG1506110	
Residual Range Organics (RRO)	**570**	Z	550	55	21	1	07/07/15	07/09/15	KWG1506110	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	74	50-150	07/09/15	Acceptable
n-Triacontane	65	50-150	07/09/15	Acceptable

Comments:

APPENDIX D

HISTORICAL DATA AND LINEAR GRAPHS

This page intentionally left blank.

Appendix D - Historical Data and Linear Graphs
Site SS-34, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
AZ-06	9/25/95	**100**	U	100	U	130		390		100	U	-		**20,000**		**2,700**		-	
	3/27/96	2	U	2	U	2	U	-		-		3.9		740		**1,400**		-	
	9/25/96	2	U	2	U	77		-		-		300		**5,300**		**2,400**		-	
	3/18/97	0.5	U	0.5	U	1.3		-		-		3.0		340		**3,300**		-	
	9/17/97	7.7		12		50		-		-		180		**3,800**		**5,200**		-	
	3/17/98	3.2		2.5	U	40		-		-		120		**4,300**		**1,500**		-	
	9/10/98	8.1		1.2		65		-		-		130		**4,600**		**2,300**		-	
	3/19/99	0.5	U	0.5	U	0.5	U	-		-		1.2		180		**1,100**		-	
	9/16/99	0.5	U	5.9		48		-		-		120		**6,200**		**3,600**		380	U
	3/31/00	1		1.5	U	41		110		2		-		**7,100**		**3,700**	D	830	U
	9/19/00	0.56		0.3	U	42		59		1.6		-		**6,200**		**2,600**		800	U
	3/15/01	10	U	15	U	47		100		10	U	-		**6,300**		**1,600**		820	U
	9/18/01	2	U	3	U	36		32		2	U	-		**5,600**		**3,300**		3,200	U
	3/13/02	2	U	3	U	11		24		2	U	-		**3,000**		**8,300**	D	910	U
	9/19/02	2	U	3	U	25		33		2	U	-		**5,100**		**22,000**	D	800	U
	3/18/03	1	U	1.8		25		46		2.3		-		**6,100**		**3,900**	D	800	U
	9/8/03	0.91		0.6	U	12		18		0.4	U	-		**4,700**		**3,700**		800	U
	3/23/04	2	U	3	U	14		24		1.1	J	-		**4,500**		**22,000**	D	**1,400**	
	9/15/04	0.2	U	0.3	U	14		25		0.33		-		**4,100**		**160,000**	D	190	U
	3/10/05	1.1		1.4	J	11		22		0.51	J	-		**4,400**		**1,700**	D	420	U
	9/13/05	2	U	3	U	6.6		16		2	U	-		**3,730**		**3,100**		410	U
	3/9/06	0.2	U	0.3	U	0.33		0.71		0.17	J	-		200		**820**		240	U
	9/21/06	8	U	12	U	8	U	-		-		14.5		**3,900**		**8,100**	D	400	U
	3/8/07	0.2	U	0.3	U	0.21		1		0.2	U	1		600		**1,500**		200	U
	9/25/07	1.2		0.3	U	3.4		12		1.6		14		**1,700**		**4,000**		190	U
	3/12/08	0.2	U	0.3	U	1.2		4		0.2	U	4.5		**1,200**	D	**4,000**	D	190	U
	9/11/08	0.43		0.5	U	3		13		0.6		14		25	U	-		4,900	U
	3/19/09	0.2	U	0.5	U	0.3	J	0.97	J	0.5	U	0.97		**1,300**		**7,000**		**1,100**	
	9/10/09	0.33		0.13	J	4.4		11		0.43	J	12		**3,800**		**60,000**		480	U
	3/25/10	0.04	J	0.5	U	0.5	U	0.23	J	0.5	U	-		640		**1,400**		250	J
	3/24/11	0.5	U	0.11	J	0.5	U	0.17	J	0.5	U	-		**1,600**		**11,000**		240	U
	4/3/12	1	U	1	U	1	U	2	U	1	U	-		50	U	120	U	240	U
	3/25/13	0.2	U	0.2	U	0.2	U	0.41		0.2	U	-		800		**1,400**		200	U
	3/26/15	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	-		190	JY	280	Y	150	L
DM-04	9/25/95	3.9		3.7		270		360		6.1		-		**5,900**		**1,500**		-	
	3/27/96	2	U	2	U	230		-		-		170		**6,400**		**950**		-	

Appendix D - Historical Data and Linear Graphs
Site SS-34, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
DM-04	9/24/96	20	U	20	U	260		-		-		610		**4,500**		**1,400**		-	
Cont.	3/18/97	0.5	U	0.74		120		-		-		62		**2,600**		**1,400**		-	
	9/18/97	**13**		1.1		120		-		-		67		**2,300**		**670**		'-	
	3/17/98	**23**		2.5	U	260		-		-		200		**4,100**		**1,700**		-	
	9/10/98	57		10	U	320		-		-		370		**8,000**		**69,000**		-	
	3/19/99	2.5	U	16		51		-		-		19		**2,500**		**20,000**		-	
	9/16/99	10	U	10		220		-		-		120		**2,400**		**1,900**		-	
	3/31/00	1	U	1.5	U	110		31		1.8		-		**3,800**		**3,500**		430	
	9/20/00	2	U	3	U	190		120		2	U	-		**4,300**		**1,800**		820	U
	3/16/01	0.2	U	0.3	U	82		28		1		-		**2,300**		**3,900**		3200	U
	9/18/01	2	U	3	U	94		48		2	U	-		**3,300**		**5,900**		1600	U
	3/13/02	2	U	3	U	42		20		2	U	-		**1,800**		**2,300**		800	U
	9/19/02	0.2	U	0.74		63		38		1		-		**2,700**		**9,900**		**1,300**	
	3/17/03	0.4	U	0.6	U	76		36		0.6		-		**2,300**		**3,600**		800	U
	9/8/03	1	U	1.5	U	45		29		1	U	-		**3,300**		**5,700**		850	U
	3/23/04	0.7		0.6	U	11		4.2		0.4	U	-		**1,700**		**2,400**		800	U
	9/15/04	0.2	U	0.3	U	110		64		0.93		-		**3,200**		**3,200**		910	U
DM-06	3/10/05	0.21		0.27	J	0.21		0.42		0.2	U	-		91		230		240	U
	9/21/06	0.2	U	0.3	U	0.2	U	-		-		0.2	U	69		130	U	500	U
	9/25/07	0.46		0.3	U	0.4		0.71		0.31		1		41		71		210	U
	9/11/08	0.2	U	0.5	U	0.5	U	0.18	J	0.5	U	0.18	J	49		170	U	670	U
	3/19/09	0.2	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	25	U	130		380	U
	3/25/10	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	-		21	J	46	J	500	U
	4/6/12	1	U	1	U	1	U	2	U	1	U	-		50	U	120	U	240	U
	3/26/13	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	100	U	200	U
	2/26/14	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	100	U	200	U
Duplicate	2/26/14	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	100	U	200	U
	3/26/15	0.5	U	0.13	J	0.5	U	0.5	U	0.5	U	-		250	U	32	J	64	J
UA-02	9/13/05	0.2	U	0.3	U	0.1	J	0.4	U	0.2	U	-		66		100	U	400	U
	3/9/06	0.2	U	0.3	U	0.2	U	0.4	U	0.2	U	-		25	U	100	U	420	U
	3/7/07	0.2	U	0.3	U	0.2	U	0.4	U	0.2	U	0.2	U	25	U	100	U	400	U
	3/12/08	0.2	U	0.3	U	0.2	U	0.4	U	0.2	U	0.2	U	100		53		190	U
	9/10/09	0.2	U	0.5	U	0.5	U	1	U	0.5	U	0.5	U	66		75	U	380	U
	3/24/11	0.5	U	0.11	J	0.5	U	0.5	U	0.5	U	-		40	J	35	J	43	J
	4/4/12	1	U	1	U	1	U	2	U	1	U	-		50	U	130	U	250	U
	3/25/13	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	100	U	200	U

Appendix D - Historical Data and Linear Graphs

Site SS-34, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
UA-02	2/26/14	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	100	U	200	U
Cont.	3/26/15	0.5	U	0.5	U	0.5	U	0.5	U	0.5	U	-		250	U	23	J	100	J
MTCA Method A Cleanup Level		5		1,000		700		1,000		1,000		-		1,000		500		500	

Notes:

TPH-G = Gasoline range total petroleum hydrocarbons

TPH-D = Diesel range total petroleum hydrocarbons

TPH-O = Heavy oil range total petroleum hydrocarbons

µg/L = Micrograms per liter

BOLD = Analyte detected at or above MTCA Method A cleanup level

D = Sample diluted prior to analysis

J = Estimated value

L = Chromatographic fingerprint resembles petroleum product w/ < amount of heavier constituents than calibration standard.

U = Analyte not detected above practical quantification limit reported

Y = Chromatographic fingerprint resembles petroleum product but does not match calibration standard.

- = No data, not applicable

Appendix D - Historical Data and Linear Graphs

Site WP-44, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
CW-9	9/22/95	**32**		2.4		90		55		10		-		**7,600**		1,000	U	-	
	3/25/96	**9.2**		2	U	2	U	-		-		1	U	250		290		-	
	9/23/96	**21**		20	U	150		-		-		10	U	**1,500**		**510**		-	
	3/18/97	0.5	U	0.5	U	0.5	U	-		-		0.6		100	U	240	U	-	
	9/17/97	**14**		1.9		13		-		-		2.6		**1,100**		320		-	
	3/16/98	**13**		0.5	U	7.7		-		-		0.5	U	350		240	U	-	
Duplicate	3/16/98	**14**		0.5	U	8.4		-		-		0.5	U	360		240	U	-	
	9/10/98	**26**		0.84		11		-		-		0.59		**1,600**		**930**		-	
Duplicate	9/10/98	**25**		0.8		11		-		-		0.54		**1,600**		**1,100**		-	
	3/18/99	0.5	U	0.5	U	0.5	U	-		-		0.5	U	100	U	240	U	-	
	9/16/99	**8.9**		1.7		24		-		-		0.64		**1,200**		**1,600**		-	
Duplicate	9/16/99	**10**		2.5		30		-		-		0.81		**1,600**		**1,300**		-	
	3/30/00	**13**		0.3	U	3.2		0.4	U	0.25		-		890		250		380	U
	9/19/00	**20**		0.93		34		2.3		0.2	U	-		**4,400**		**1,900**		820	U
	3/15/01	**70**		5.5		25		27		2	U	-		**1,500**		**660**		800	U
	9/18/01	**40**		1.9		5.2		3.1		1	U	-		**1,600**		480		830	U
	3/12/02	1.5		0.3	U	6.2		1.9		1.3		-		140		200	U	800	U
	9/17/02	**42**		6	U	100	D	8	U	4	U	-		**2,900**		**1,600**			
Duplicate	9/17/02	**42**	D	3	U	120		4	U	2	U	-		**2,900**		**1,300**		800	U
	3/17/03	**64**		30	D	540	D	530	D	26	D	-		**17,000**		**1,100**			
	9/8/03	**49**		2.1		120		31		1.4		-		**8,600**		**1,600**		800	U
	3/23/04	**24**		3	U	62		4.7		0.2	U	-		**4,900**		**1,200**		800	U
	9/15/04	**25**		1.3		26		3.4		0.17	J	-		**6,200**		**1,800**		820	U
	3/10/05	**47**		6		9.9		2.8		1	U	-		**3,800**		**730**		190	U
	9/13/05	**30**		2.3		23		3.1		0.66	J	-		**4,840**		**2,000**		470	
Duplicate	9/13/05	**29**		2.4		20		3.2		0.79	J	-		**4,310**		**2,100**		410	U
	3/9/06	2.1		0.38		1.3		0.26	J	0.69		-		300		**550**		440	
	9/21/06	**9.48**		3	U	5.13		-		-		2	U	**1,800**		**1,900**		260	
	3/7/07	2.5		0.4		0.94		0.54		0.96		1.5		520		**600**		400	U
Duplicate	3/7/07	2.5		0.39		1.1		0.51		0.9		1.4		400		**590**		400	U
	9/25/07	**8.2**		0.95		2.3		1.7		0.26		1.9		**1,500**		**1,300**		290	
	3/12/08	11		2.4		2.1		1.7		0.24		2.1		**1,900**	D	**670**		190	U
	9/11/08	**8.8**		1.5		0.73		0.43	J	0.5	U	0.43	J	**1,800**		**980**		210	
	3/19/09	**9.8**		2.9		3.5		0.52	J	0.5	U	0.52		**2,600**		620		380	U
	9/10/09	9		1.7		0.86		0.48	J	0.5	U	0.48	J	**2,800**		**830**		380	U
	3/24/10	12		2.8		1.4	U	0.75		0.33	J	-		**3,300**		360		500	U
	3/24/11	1.1		0.34	J	0.5	U	0.14	J	0.5	U	-		**2,900**		97	J	85	J
	4/3/12	**7.4**		2.8		2.6		2	U	1	U	-		**2,200**		**890**		290	

Appendix D - Historical Data and Linear Graphs

Site WP-44, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
CW-9	3/25/13	**8.6**		3.9		1.7		0.4	U	0.2	U	-		**2,600**		120		200	U
Cont.	2/26/14	2.3		1.4		0.81		1.5		0.26		-		300		200		200	U
	3/26/15	0.5	U	0.22	J	0.5	U	0.5	U	0.5	U	-		250	U	37	J	57	J
Duplicate	3/26/15	0.5	U	0.2	J	0.5	U	0.5	U	0.5	U	-		250	U	39	J	31	J
CW-14b	9/22/95	3.3		1.1		2		10		1.1		-		460		**2,600**		-	
	3/25/96	2		2	U	2	U	-		-		3.1		280		**2,500**		-	
	9/23/96	2	U	2	U	3.9		-		-		6.2		250		**2,300**		-	
	3/18/97	1.6		0.5	U	0.5	U	-		-		2.4		100	U	**2,500**		-	
	9/17/97	1.4		0.76		0.5	U	-		-		6.3		230		**240**	U	-	
	3/16/98	1.4		0.5	U	0.5	U	-		-		1.2		160		**1,900**		-	
	9/10/98	1.8		0.5	U	0.5	U	-		-		3.3		300		**2,300**		-	
	3/18/99	2.1		0.57		0.5	U	-		-		1.5		110		**3,600**		-	
	9/16/99	1		0.5	U	0.5	U	-		-		2.9		220		**3,200**		-	
	3/30/00	0.82		0.3	U	0.2	U	0.7		0.2	U	-		270		**4,200**	D	650	
	9/19/00	0.78		0.3	U	0.23		1.6		0.2	U	-		250		**3,300**		830	U
	3/15/01	1.3		0.3	U	0.75		1.9		0.2	U	-		250		**5,200**	D	3,200	U
	9/18/01	**7**		1.8		0.77		1.4		0.27		-		230		**4,200**	D	1,600	U
Duplicate	9/18/01	**7.1**		1.6		0.71		1.3		0.27		-		250		**4,900**	D	1,600	U
	3/12/02	**6**		0.35		0.38		0.76		0.76		-		210		**6,300**	D	1,600	U
	9/17/02	**5.6**		0.6	U	3.1		2.4		0.4	U	-		350		**4,700**	D	800	U
	3/17/03	2.9		0.6	U	5.9		7.4		0.54		-		480		**6,400**	D	820	U
	9/8/03	9.2		0.59		1.8		1.7		0.27		-		370		**6,800**		800	U
Duplicate	9/8/03	**9.2**		0.57		2.1		1.7		0.2	U	-		420		**7,100**		800	U
	3/23/04	**6.6**		0.3	U	0.2		0.47		0.2	U	-		300		**6,800**	D	**1,100**	
	9/15/04	3.8		0.16	J	0.34		1.1		0.19	J	-		320		**5,400**	D	**940**	
Duplicate	9/15/04	3.8		0.16	J	0.32		1.1		0.17	J	-		340		**5,200**	D	**810**	
	3/10/05	2.2		0.48		0.23		0.74		0.26		-		270		**4,900**	D	**760**	
	9/13/05	1.1		0.15	J	0.63		0.4		0.15		-		341		**3,300**		**760**	
	3/9/06	1		0.3	U	0.2	U	0.37	J	0.2	U	-		160		**5,100**	D	**1,500**	
Duplicate	3/9/06	1		0.3	U	0.2	U	0.35	J	0.2	U	-		140		**5,100**	D	**1,300**	
	9/21/06	0.91		0.32		0.2	U	-		-		0.33		170		**3,700**	D	**530**	
	3/7/07	0.95		0.3	U	0.2	U	0.48		0.2		0.48		170		**4,100**		**1,100**	
	9/25/07	0.88		0.3	U	0.2	U	0.51		0.2	U	0.51		130		**2,700**		300	
	3/12/08	0.69		0.3	U	0.2	U	0.4	U	0.2	U	0.2	U	140		**3,100**		450	
Duplicate	3/12/08	0.67		0.3	U	0.2	U	0.4	U	0.2	U	0.2	U	130		**3,200**		**540**	
	9/11/08	1		0.5	U	0.5	U	1	U	0.5	U	0.5	U	170		**2,100**		**510**	
Duplicate	9/11/08	0.94		0.5	U	0.5	U	1	U	0.5	U	0.5	U	160		**2,300**		**520**	
	3/19/09	0.87		0.5	U	0.5	U	1	U	0.5	U	0.5	U	220		**2,200**		1,900	U

Appendix D - Historical Data and Linear Graphs
Site WP-44, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
CW-14 Dup	3/19/09	0.88		0.5	U	0.5	U	1	U	0.5	U	0.5	U	200		**2,300**		1,900	U
	9/10/09	0.54		0.5	U	0.5	U	1	U	0.5	U	0.5	U	180		**2,600**		**580**	
Duplicate	9/10/09	0.57		0.5	U	0.5	U	1	U	0.5	U	0.5	U	180		**2,700**		**620**	
	3/24/10	0.62		0.07	J	0.5	U	0.5	U	0.5	U	-		220	J	**3,000**		160	J
Duplicate	3/24/10	0.67		0.5	U	0.5	U	0.5	U	0.5	U	-		210	J	**3,000**		180	J
	3/24/11	0.56		0.07	J	0.5	U	0.5	U	0.5	U	-		160	J	**2,700**		470	J
Duplicate	3/24/11	0.56		0.13	J	0.5	U	0.5	U	0.5	U	-		170	J	**2,500**		480	J
	4/4/12	1	U	1	U	1	U	2	U	1	U	-		210		**3,300**		**920**	
	3/25/13	0.33		0.2	U	0.2	U	0.4	U	0.2	U	-		250	U	250		200	U
	2/26/14	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U			250	U	280		480	
	3/26/15	0.11	J	0.07	J	0.5	U	0.5	U	0.5	U			110	JY	**2,700**	Y	**520**	L
MTCA Method A Cleanup Level		5		1,000		700		1,000		1,000		-		1,000		500		500	

Notes:

TPH-G = Gasoline range total petroleum hydrocarbons
TPH-D = Diesel range total petroleum hydrocarbons
TPH-O = Heavy oil range total petroleum hydrocarbons
µg/L = Micrograms per liter
BOLD = Analyte detected at or above MTCA Method A cleanup level
D = Sample diluted prior to analysis
J = Estimated value
L = Chromatographic fingerprint resembles petroleum product w/ < amount of heavier constituents than calibration standard.
U = Analyte not detected above practical quantification limit reported
Y = Chromatographic fingerprint resembles petroleum product but does not match calibration standard.
- = No data, not applicable

Appendix D. Historical Data and Linear Graphs
Site DP-60, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)		TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
CR-02	4/5/95	1.1		2.1		1.5		1.6		0.48	J	-		880		**1,500**		-	
	4/5/95	1		1.7		1.5		2.1		0.81	J	-		-		-		-	
	9/21/95	1	U	2		1	U	1	U	1	U	-		950		**1,400**		-	
	3/25/96	2.0.0	U	2.3		2	U	-		-		2.0		790		**1,300**		-	
	9/25/96	2.0.0	U	2		2.6		-		-		4.2		550		**1,800**		-	
	3/18/97	0.5	U	0.77		8.9		-		-		5.1		480		**2,800**		-	
	9/18/97	1.3		3.2		8.6		-		-		6.7		670		**2,500**		-	
	3/17/98	0.5	U	0.5	U	0.5	U	-		-		0.5	U	270		**55,000**		-	
	3/19/99	0.5	U	0.6		0.5	U	-		-		1.6		410		**2,800**		-	
Duplicate	3/19/99	0.5	U	0.93		0.5		-		-		1.7		480		**2,800**		-	
	3/30/00	0.2	U	0.32		0.27		0.45		0.2	U	-		800		**4,300**	D	460	
Duplicate	3/30/00	0.2	U	0.33		0.26		0.46		0.2	U	-		1,000		**3,100**	D	400	
	3/16/01	2	U	3	U	2	U	4	U	2	U	-		1,000		**4,800**	D	3200	U
Duplicate	3/16/01	0.4	U	0.6	U	0.63		1.5		0.4	U	-		1,500		**4,500**	D	3200	U
	3/12/02	0.4	U	0.8		0.4	U	0.8	U	0.4	U	-		580		**2,600**	D	**810**	
Duplicate	3/12/02	0.4	U	0.75		0.4	U	0.8	U	0.4	U	-		550		**4,300**	D	1600	U
	3/18/03	0.4	U	0.6	U	0.63		0.9		0.4	U	-		790		**8,000**	D	**960**	
	3/23/04	0.2	U	0.6		0.2	U	0.32		0.2	U	-		530		**21,000**	D	**1700**	
Duplicate	3/23/04	0.2	U	0.6		0.2	U	0.3	J	0.2	U	-		500		**4,500**	D	800	U
	3/10/05	0.2	U	0.93		0.23		0.59		0.14	J	-		460		**4,100**	D	340	
Duplicate	3/10/05	0.22		1.1		0.23		0.57		0.18	J	-		490		**4,200**	D	360	
	3/9/06	0.2	U	1.1		0.2	U	0.34		0.12	J	-		360		**3,100**	D	**580**	
	3/8/07	-		-		-		-		-		-		-		**2,100**		500	
	3/12/08	-		-		-		-		-		-		-		**1,500**		280	
	3/19/09	-		-		-		-		-		-		-		**1,000**		380	U
	3/25/10	-		-		-		-		-		-		-		**1,700**		55	J
	6/29/11	-		-		-		-		-		-		-		**1,900**		220	J
Duplicate	6/29/11	-		-		-		-		-		-		-		**2,300**		270	J
	4/4/12	-		-		-		-		-		-		-		**1,500**		400	
	3/25/13	-		-		-		-		-		-		-		**6,100**		**980**	
	3/5/14	-		-		-		-		-		-		-		860		200	
	6/24/15	-		-		-		-		-		-		-		**1,900**	Y	470	J
TW-9	4/4/95	4.4		1	U	1	U	5.9		1.4		-		1,200		540		-	
	4/4/95	3.9		1	U	1	U	5.3		1.5		-		-		-		-	
	9/21/95	1	U	1	U	9.4		1	U	1.9		-		1,100		**1,900**		-	
	9/21/95	1	U	1	U	1	U	1	U	1.8		-		-		-		-	
	3/25/96	2	U	2	U	2	U	-		-		1.6		790		600		-	

Appendix D. Historical Data and Linear Graphs
Site DP-60, JBLM McChord Field

Well ID	Date	Benzene (µg/L)		Toluene (µg/L)		Ethylbenzene (µg/L)		m,p-Xylene (µg/L)		o-Xylene (µg/L)		Total Xylenes (µg/L)	TPH-G (µg/L)		TPH-D (µg/L)		TPH-O (µg/L)	
TW-9	9/24/96	2	U	2	U	2	U	-		-		1.1	350		660		-	
Duplicate	9/24/96	2	U	2	U	2	U	-		-		1.6	320		880		-	
	3/17/97	0.5	U	0.5	U	0.8		-		-		1.3	270		760		-	
Duplicate	3/17/97	0.5	U	0.5	U	1.1		-		-		2.2	220		470		-	
	9/16/97	0.5	U	0.5	U	1.1		-		-		2.8	470		410		-	
Duplicate	9/16/97	0.5	U	0.5	U	1.3		-		-		3.1	530		400		-	
	3/16/98	0.69		0.5	U	0.5	U	-		-		0.5	330		**3,600**		-	
	3/18/99	0.5	U	5		1.7		-		-		6.6	620		940		-	
	3/31/00	0.2	U	<0.3	U	0.2	U	1.3		0.2	U	-	430		**2,600**	D	**1,000**	
	3/15/01	1	U	1.5	U	1	U	2	U	1	U	-	410		**3,100**		**1,100**	
	3/12/02	0.4	U	0.6	U	0.4	U	1.5		0.4	U	-	580		**6,900**	D	**3,200**	D
	3/18/03	0.2	U	<0.3	U	0.69		1.4		0.25		-	210		**1,300**		800	U
Duplicate	3/18/03	0.2	U	<0.3	U	0.2	U	1.3		0.25		-	230		**1,200**		800	U
	6/10/04	0.2	U	0.46		0.79		3.5		2		-	430		**1,700**		800	U
Duplicate	6/10/04	0.2	U	0.44		0.77		3.4		2		-	570		**1,900**		800	U
	3/10/05	0.14	J	0.27	J	0.39		3.1		1.3		-	500		**7,800**	D	**4,100**	D
	3/9/06	0.2	U	0.3	U	0.62		0.96		0.37		-	310		**1,300**		**640**	
	3/8/07	-		-		-		-		-		-	-		700		**630**	
	3/12/08	-		-		-		-		-		-	-		770		260	
	3/19/09	-		-		-		-		-		-	-		950		390	
	3/25/10	-		-		-		-		-		-	-		730		110	
	6/29/11	-		-		-		-		-		-	-		680		180	
	4/6/12	-		-		-		-		-		-	-		440		280	
	3/25/13	-		-		-		-		-		-	-		170		200	U
	3/5/14	-		-		-		-		-		-	-		**3,100**		**1100**	
	6/24/15	-		-		-		-		-		-	-		970	Y	**570**	Z
MTCA Method A Cleanup Level		5		1,000		700		1,000		1,000		-	1,000		1,000*		500	

Notes:
TPH-G = Gasoline range total petroleum hydrocarbons
TPH-D = Diesel range total petroleum hydrocarbons
TPH-O = Heavy oil range total petroleum hydrocarbons
µg/L = Micrograms per liter
BOLD = Analyte detected at or above MTCA Method A cleanup level
D = Sample diluted prior to analysis
J = Estimated value
L = Chromatographic fingerprint resembles petroleum product w/ < amount of heavier constituents than calibration standard.

Appendix D. Historical Data and Linear Graphs

Site DP-60, JBLM McChord Field

Well ID	Date	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)	TPH-G (µg/L)	TPH-D (µg/L)	TPH-O (µg/L)

U = Analyte not detected above practical quantification limit reported

Y = Chromatographic fingerprint resembles petroleum product but does not match calibration standard.

Z = Chromatographic fingerprint does not resemble a petroleum product.

- = No data, not applicable

* = Site specific clean up level

Appendix D - Historical Data and Linear Graphs
Base Boundary Monitoring Wells, JBLM McChord Field

Well ID	Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)
CW-4	3-Apr-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.39 J**	1.0 U	1.0 U	1.0 U	-
	21-Sep-95	0.5 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	22-Mar-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	12-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	12-Mar-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	17-Mar-99	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	13-Mar-01	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	13-Mar-03	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	11-Mar-05	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Mar-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	21-Sep-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	11-Mar-08	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Sep-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	4-Apr-12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	26-Mar-15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
LT-2	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-95	0.3 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	21-Mar-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	10-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	12-Mar-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	16-Mar-99	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	13-Mar-01	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6 U
	13-Mar-03	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	11-Mar-05	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	6-Mar-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	18-Mar-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	25-Mar-13	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	-
LT-3	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-95	0.3 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-96	**2.9**	**5.2**	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	10-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	15-Sep-97	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	7-Sep-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	15-Sep-99	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	5-Sep-03	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Mar-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-

Appendix D - Historical Data and Linear Graphs
Base Boundary Monitoring Wells, JBLM McChord Field

Well ID	Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)
LT-3 Cont.	21-Sep-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Sep-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	23-Mar-10	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	26-Feb-14	0.2 U	0.2 U	0.2 U	0.2 U	-	-	-	-	-	-
LT-4	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	21-Mar-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	10-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	12-Mar-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	22-Mar-00	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-
	12-Mar-02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	16-Mar-04	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	6-Mar-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	18-Mar-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	23-Mar-11	**0.17 J**	0.5 U	0.5 U	0.5 U	-	**0.08 J**	-	-	-	-
Duplicate	23-Mar-11	**0.18 J**	0.5 U	0.5 U	0.5 U	-	0.5 U	-	-	-	-
	26-Mar-15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
LT-5	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-95	0.3 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-96	**1.4**	**1.7**	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	10-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	15-Sep-97	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	7-Sep-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	13-Sep-00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6 U
	19-Sep-02	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	15-Sep-04	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	16-Sep-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Sep-08	**0.22J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	0.5 U
	9-Sep-10	**0.10 J**	0.5 U	0.5 U	0.5 U	-	**0.12 J**	-	-	-	-
Duplicate	8-Sep-08	**0.22J**	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	0.5 U
	26-Feb-14	0.2 U	0.2 U	0.2 U	0.2 U	-	-	-	-	-	-
LT-6	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	20-Sep-95	0.5 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	20-Sep-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	18-Sep-97	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	8-Sep-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	15-Sep-99	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U

Appendix D - Historical Data and Linear Graphs
Base Boundary Monitoring Wells, JBLM McChord Field

Well ID	Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)
LT-6 Cont.	18-Sep-01	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	5-Sep-03	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	16-Sep-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	11-Mar-08	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	11-Mar-08	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	6-Apr-12	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
	26-Mar-15	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
LT-7	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	20-Sep-95	0.5 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
Duplicate	19-Sep-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	15-Sep-97	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
Duplicate	15-Sep-97	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	**0.77**	0.5 U	-	-	0.5 U
	7-Sep-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	**1.5**	0.5 U	-	-	0.5 U
	13-Sep-00	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6 U
	19-Sep-02	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	19-Sep-02	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	15-Sep-04	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	16-Sep-06	**0.67**	-	-	-	-	-	-	-	-	-
Duplicate	16-Sep-06	**0.71**	-	-	-	-	-	-	-	-	-
	8-Sep-08	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	0.5 U
	23-Mar-10	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	26-Feb-14	0.2 U	0.2 U	0.2 U	0.2 U	-	-	-	-	-	-
LT-10	31-Mar-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	19-Sep-95	0.3 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	22-Mar-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	11-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	12-Mar-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	16-Mar-99	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	13-Mar-01	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6 U
	13-Mar-03	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	11-Mar-05	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	8-Mar-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	8-Mar-06	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	21-Sep-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	21-Sep-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-

Appendix D - Historical Data and Linear Graphs
Base Boundary Monitoring Wells, JBLM McChord Field

Well ID	Date	TCE (µg/L)	cis-1,2-DCE (µg/L)	1,1-DCE (µg/L)	Vinyl Chloride (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	m,p-Xylene (µg/L)	o-Xylene (µg/L)	Total Xylenes (µg/L)
LT-10 Cont.	8-Sep-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	8-Sep-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	25-Mar-13	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	-
LT-11	4-Apr-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.64 J**	1.0 U	**0.25 J**	1.0 U	-
Duplicate	4-Apr-95	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**0.52 J**	1.0 U	1.0 U	1.0 U	-
	20-Sep-95	0.5 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
Duplicate	20-Sep-95	0.5 U	-	0.5 U	0.5 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	-
	21-Mar-96	1.2 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 U	2.0 U	-	-	1.0 U
	11-Mar-97	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	12-Mar-98	0.2 U	0.2 U	0.2 U	0.2 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	22-Mar-00	0.2 U	0.2 U	0.2 U	1.0 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-
	12-Mar-02	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	-	-	0.5 U
	16-Mar-04	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	6-Mar-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	6-Mar-07	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	18-Mar-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
Duplicate	18-Mar-09	0.5 U	0.5 U	0.5 U	0.5 U	-	-	-	-	-	-
	25-Mar-13	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4 U	0.2 U	-

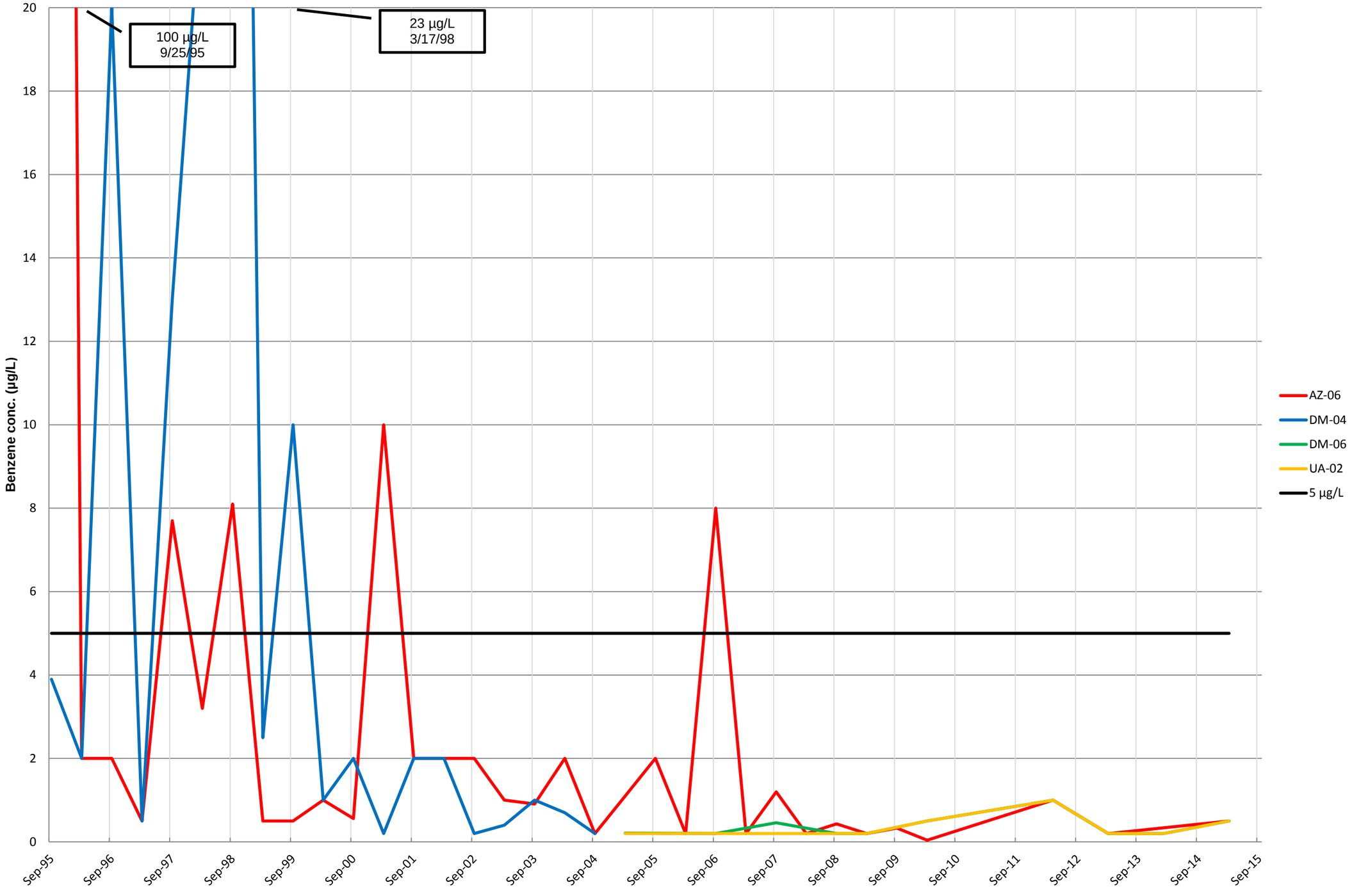
Notes:

TCE = Trichloroethylene
cis-1,2-DCE = cis-1,2-dichloroethylene
1,1-DCE = 1.1-dichloroethylene
µg/L = Micrograms per liter
BOLD = Analyte detected above practical quantification limit
J = Estimated value
U = Analyte not detected above practical quantification limit reported
- = No data, not applicable

Appendix D - Historical Data and Linear Graphs

Benzene Concentration Linear Graph

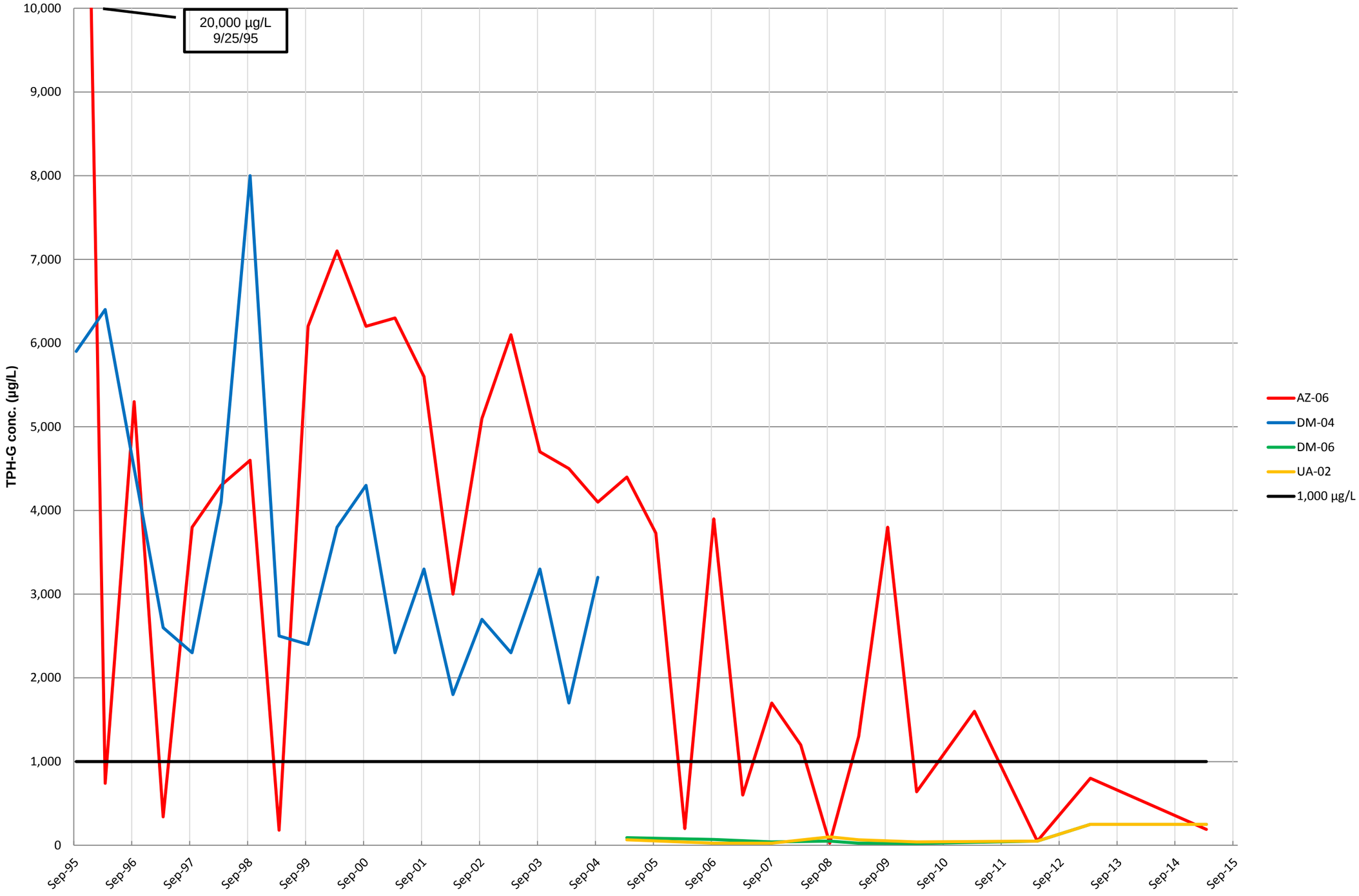
Site SS-34, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-G Concentration Linear Graph

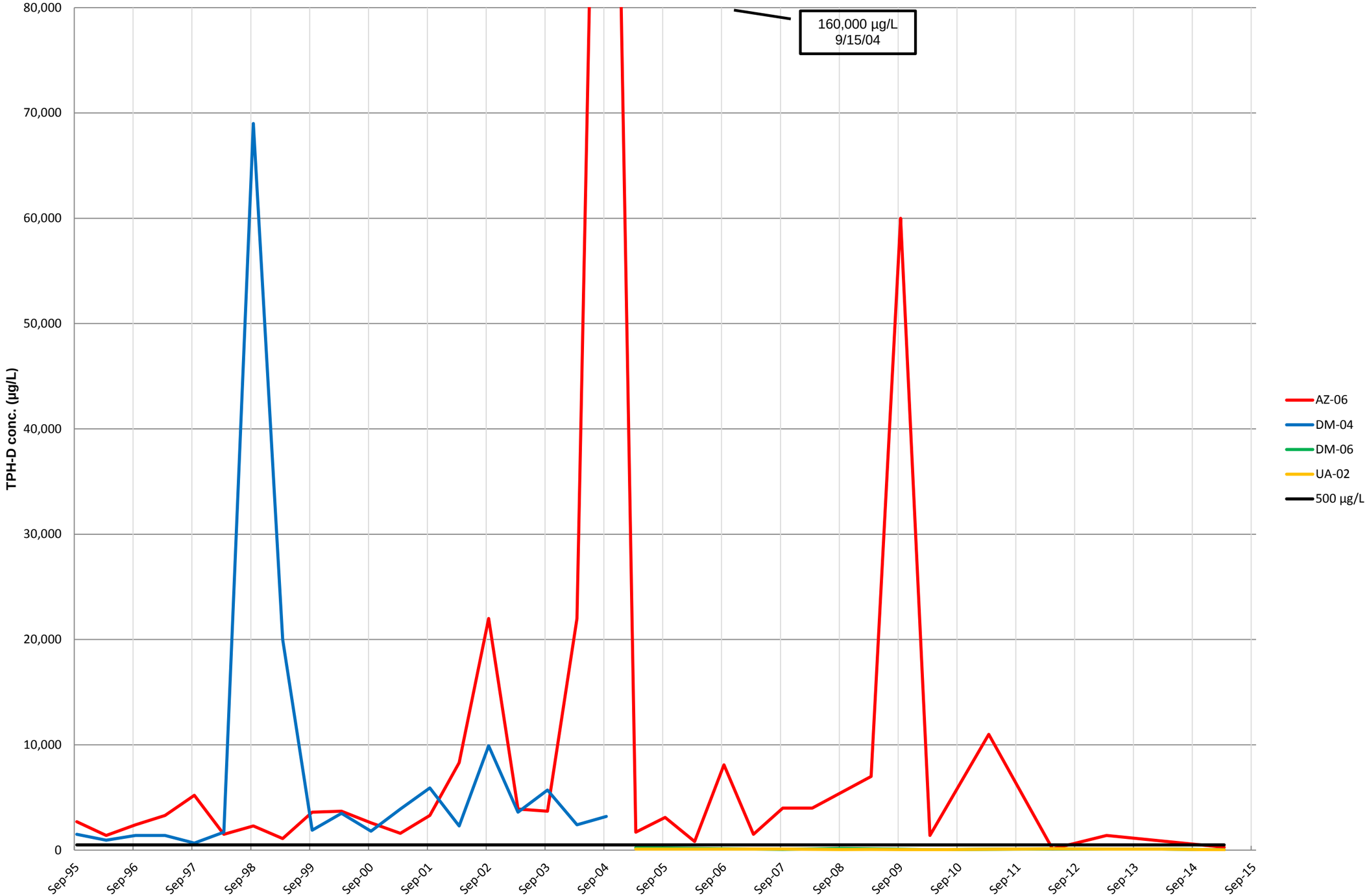
Site SS-34, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-D Concentration Linear Graph

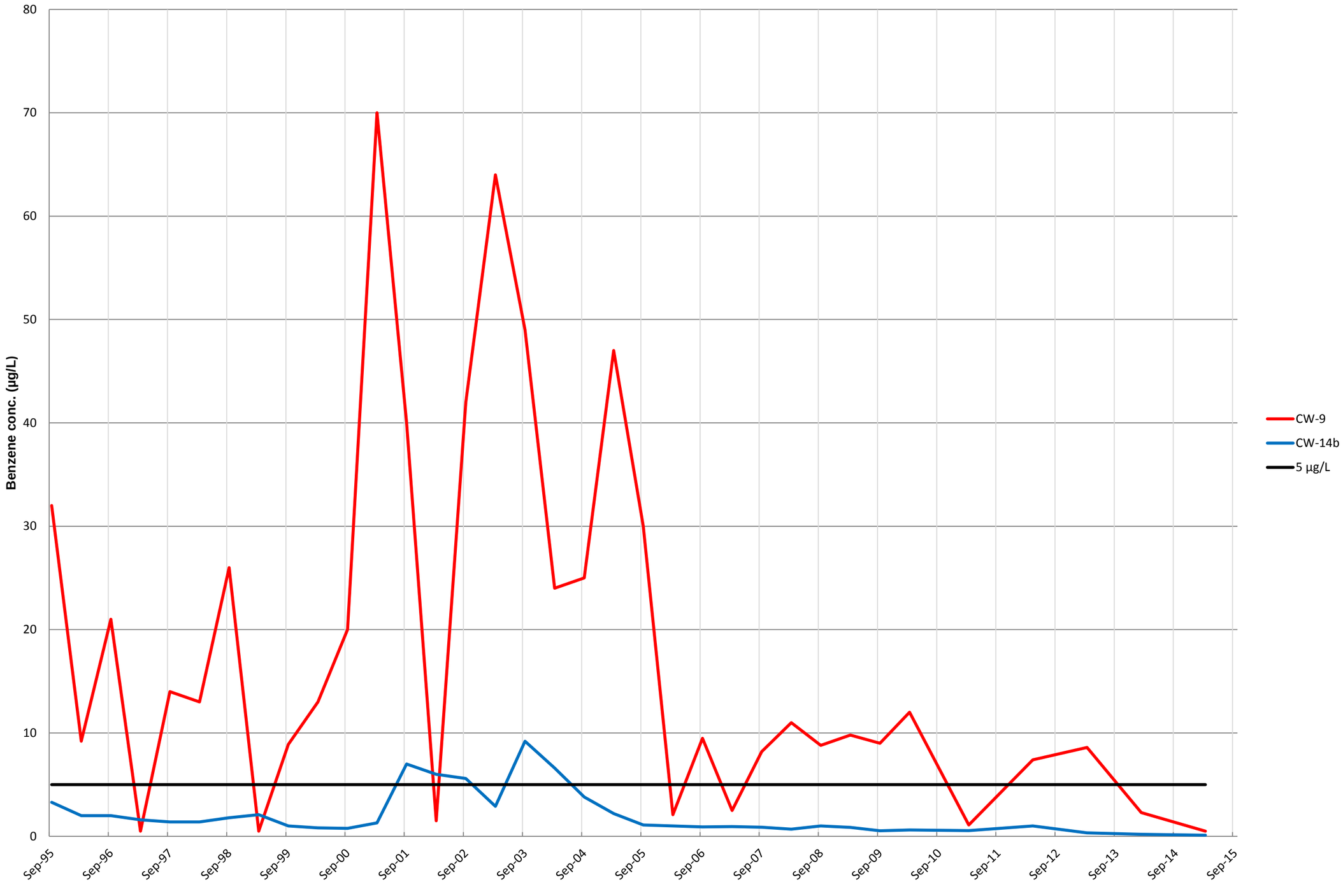
Site SS-34, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

Benzene Concentration Linear Graph

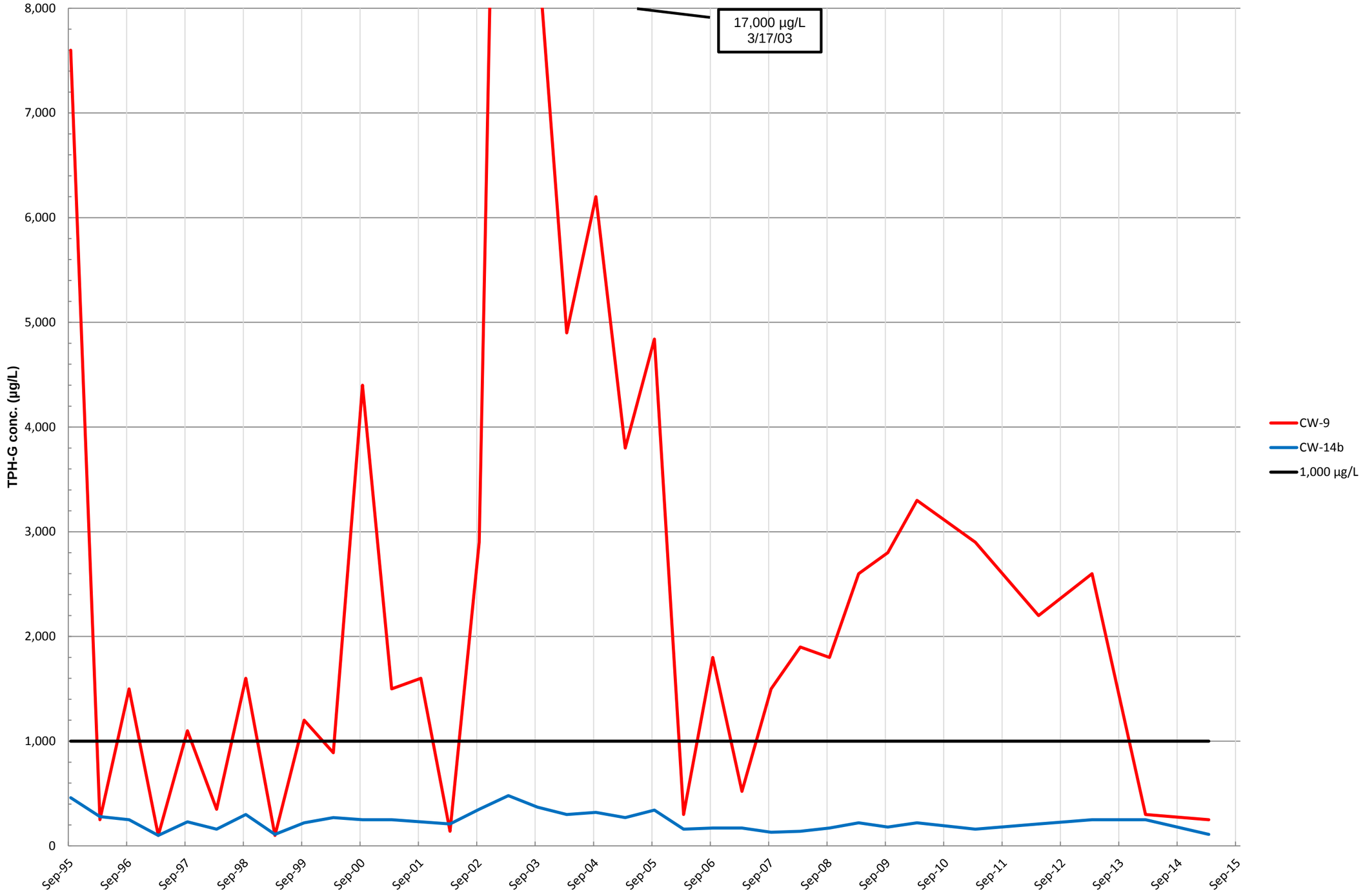
Site WP-44, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-G Concentration Linear Graph

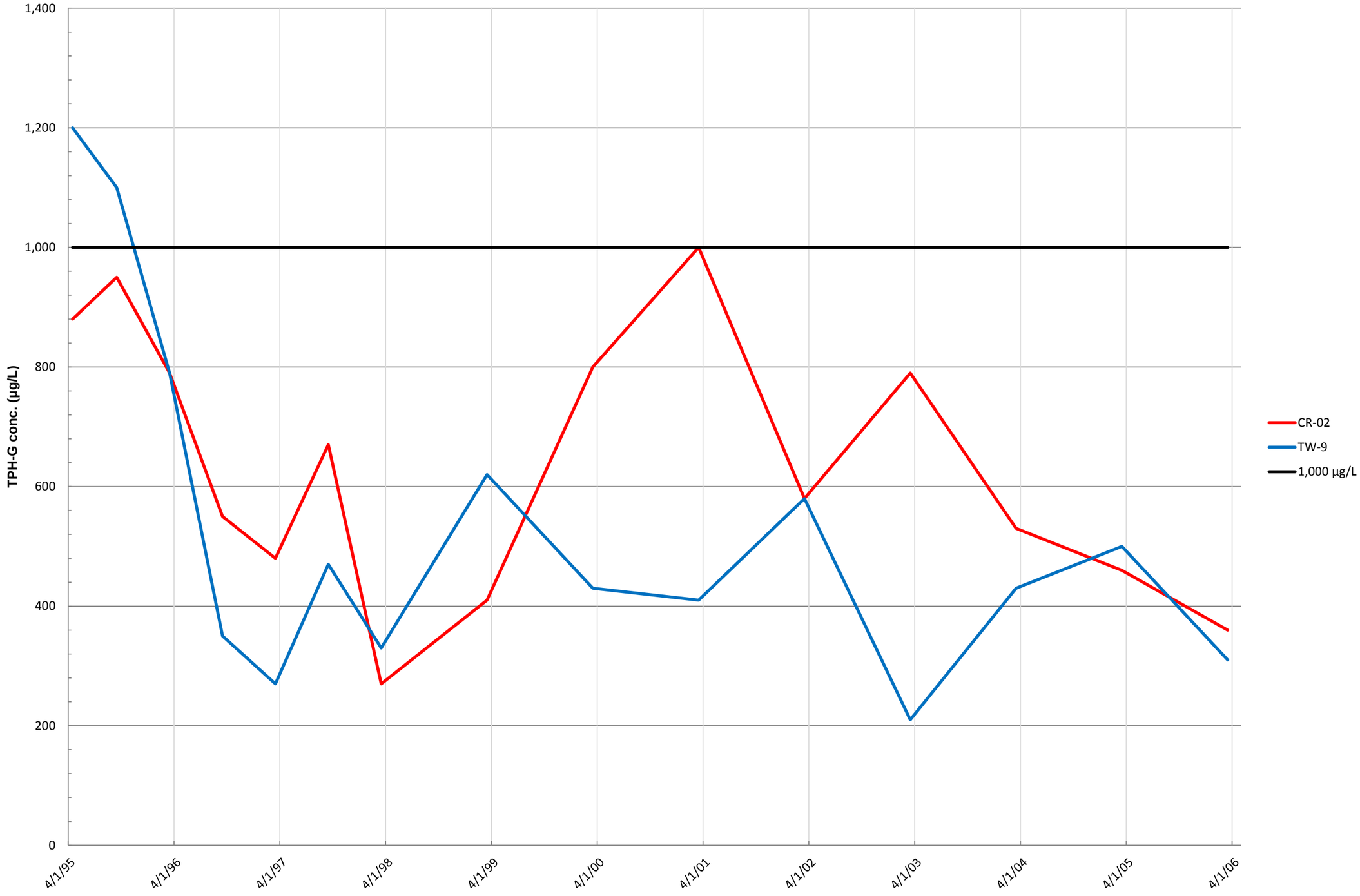
Site WP-44, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-G Concentration Linear Graph

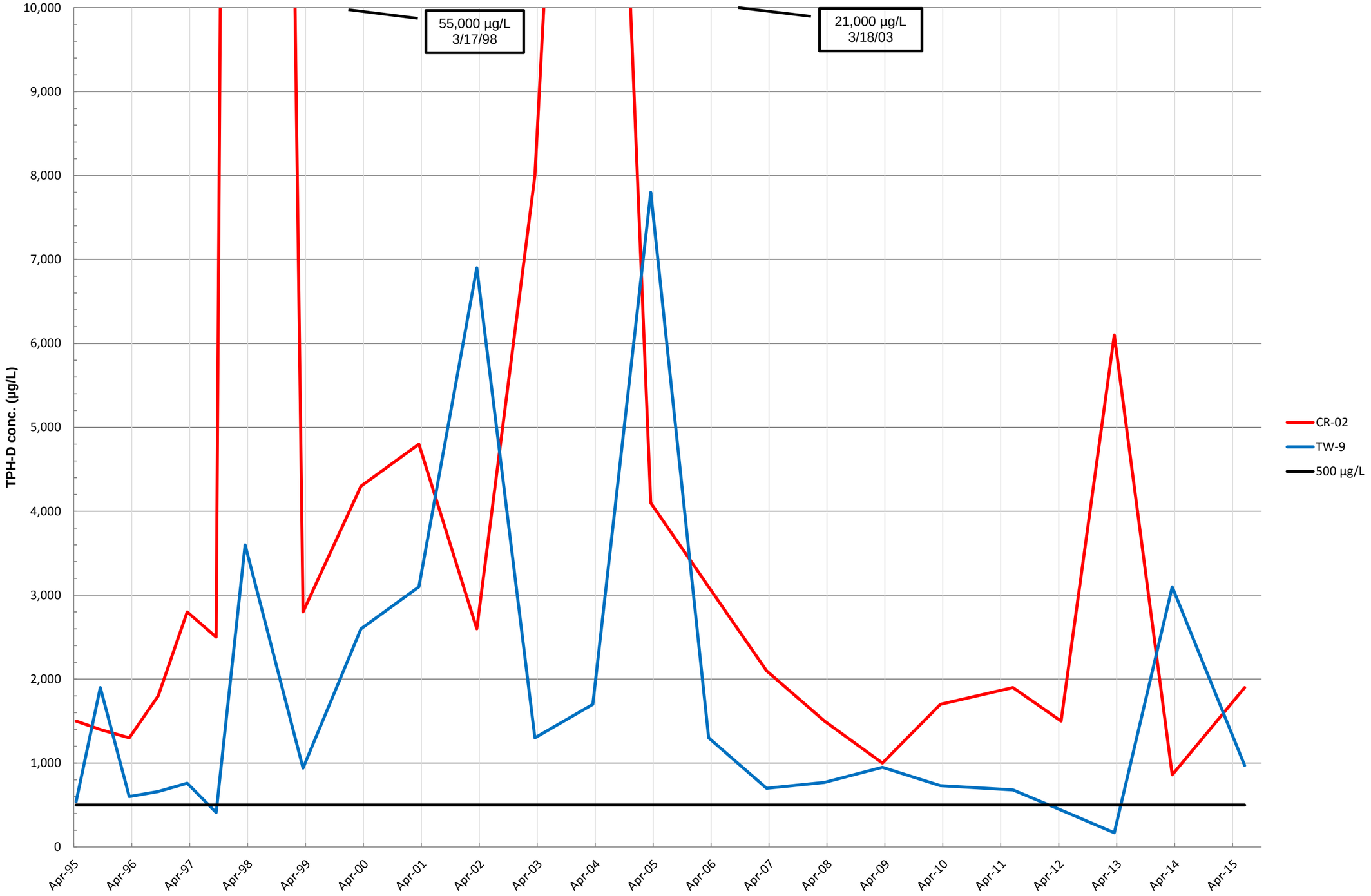
Site DP-60, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-D Concentration Linear Graph

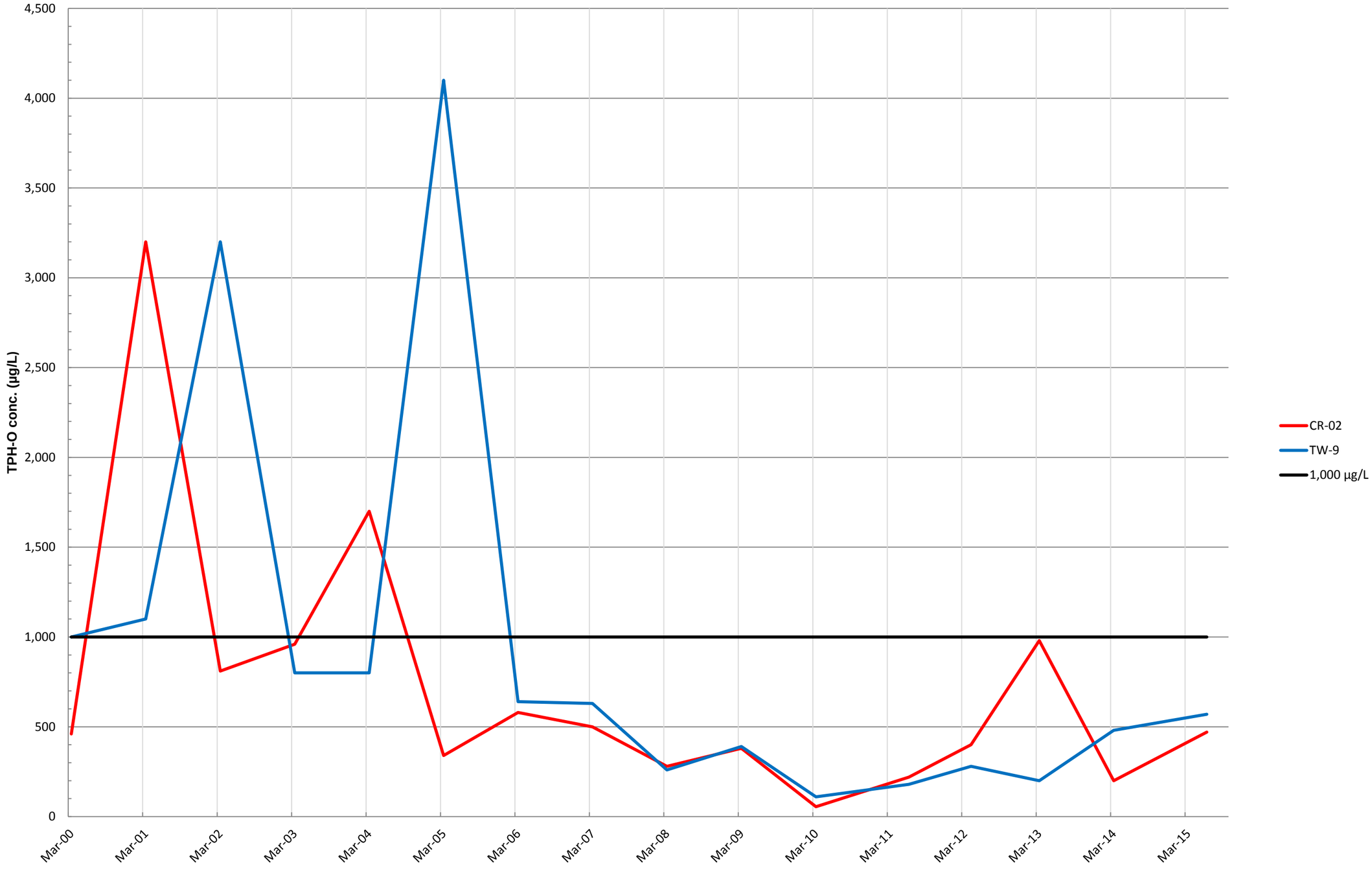
Site DP-60, JBLM McChord Field



Appendix D - Historical Data and Linear Graphs

TPH-O Concentration Linear Graph

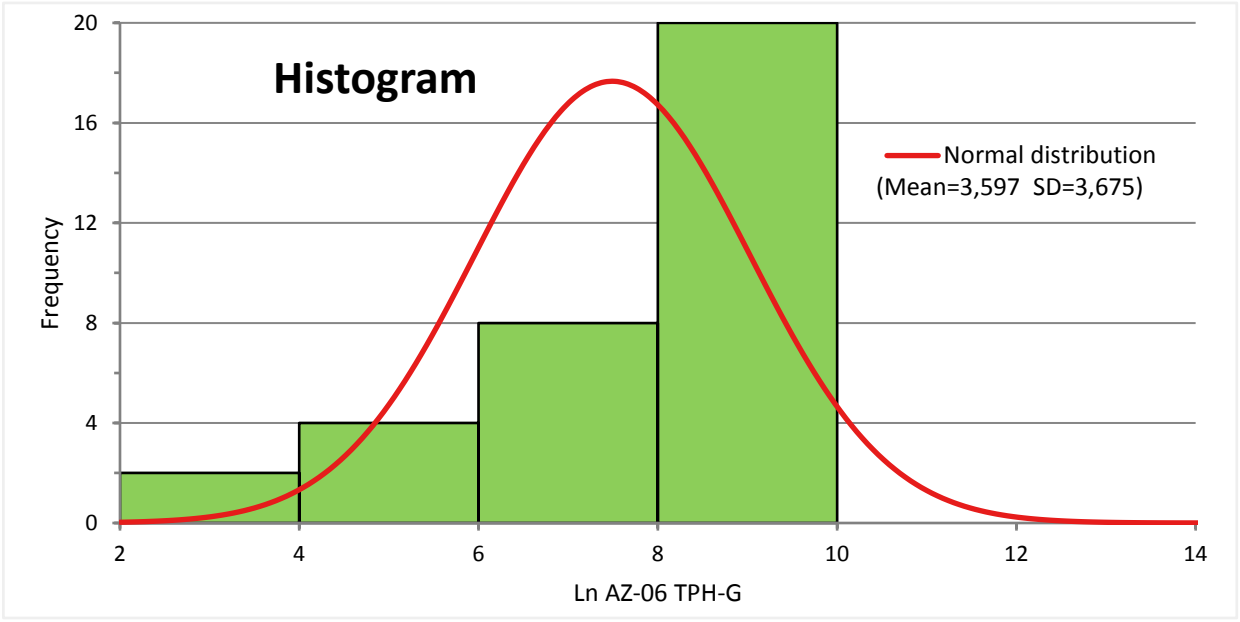
Site DP-60, JBLM McChord Field

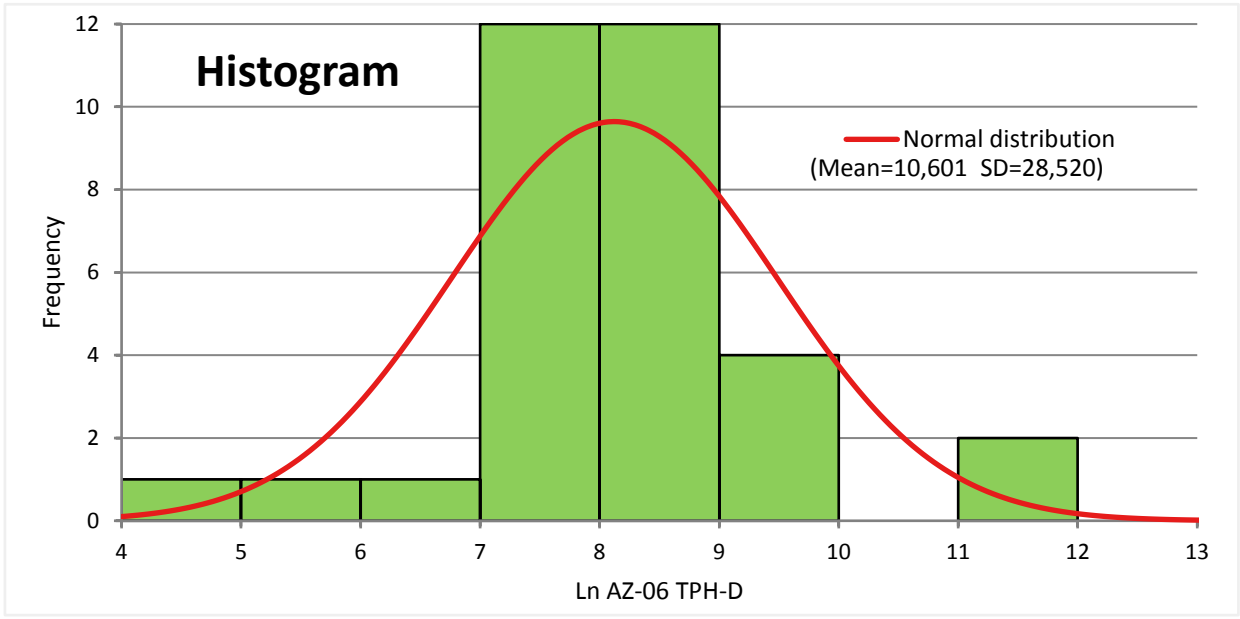


APPENDIX E
STATISTICS GRAPHS

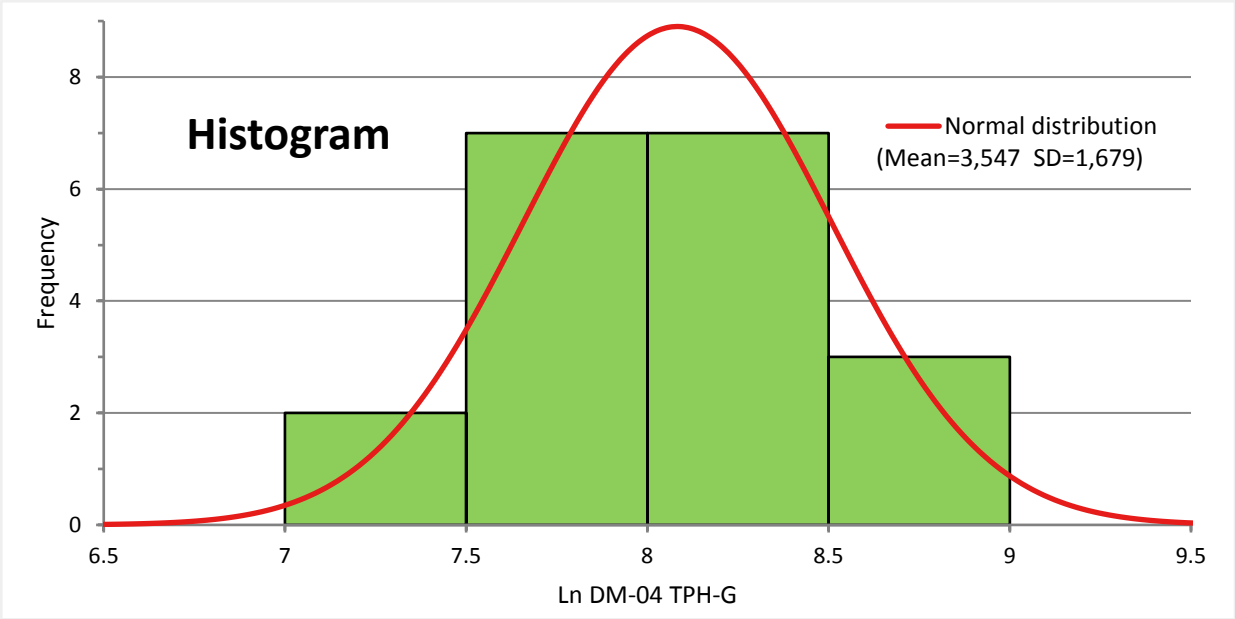
This page intentionally left blank.

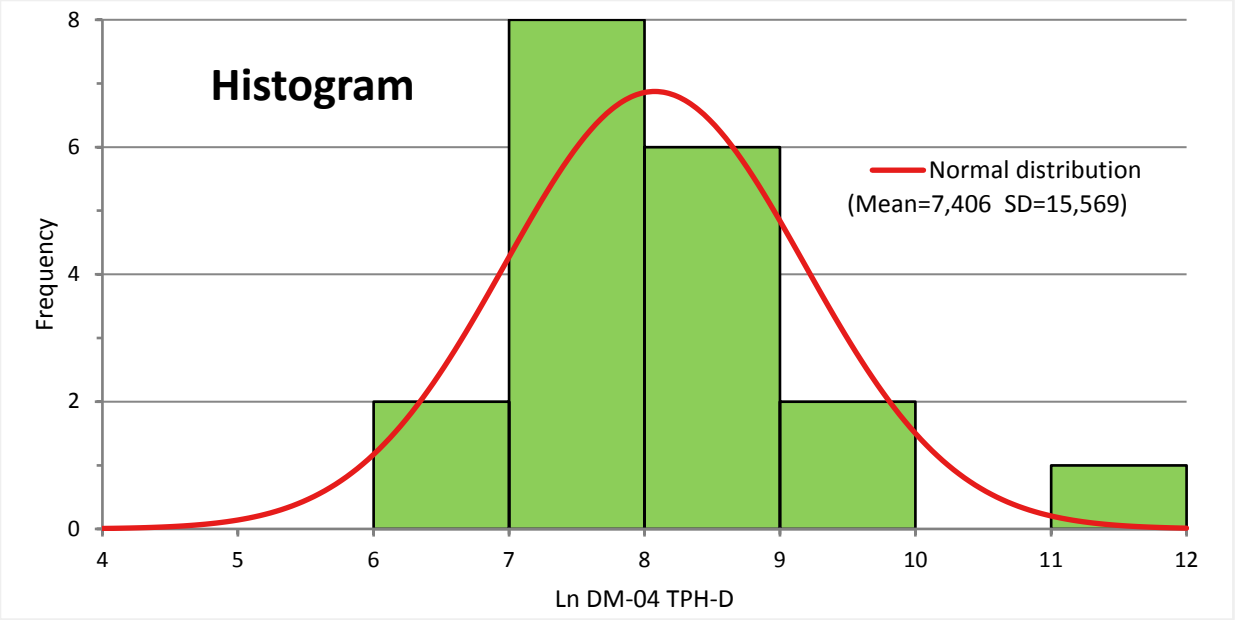
Appendix E. Statistics Graphs
Site SS-34, JBLM McChord Field



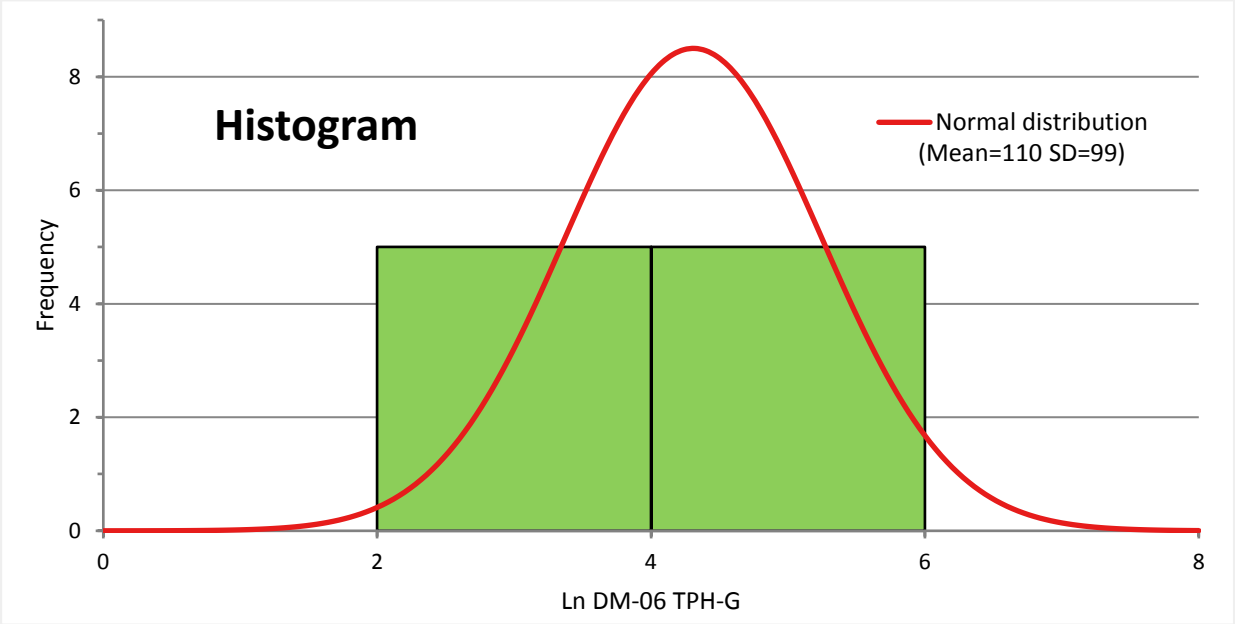


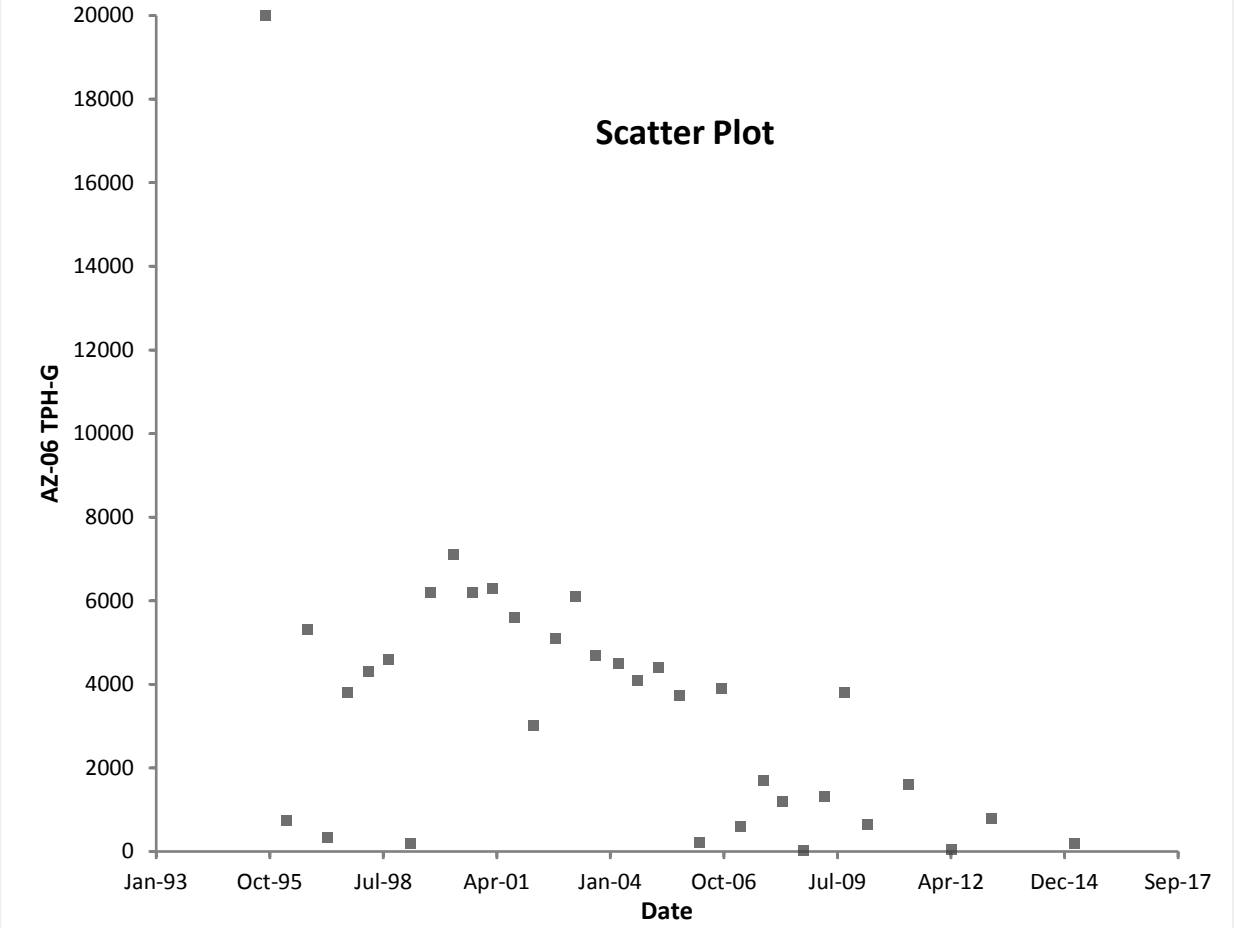
Appendix E. Statistics Graphs
Site SS-34, JBLM McChord Field



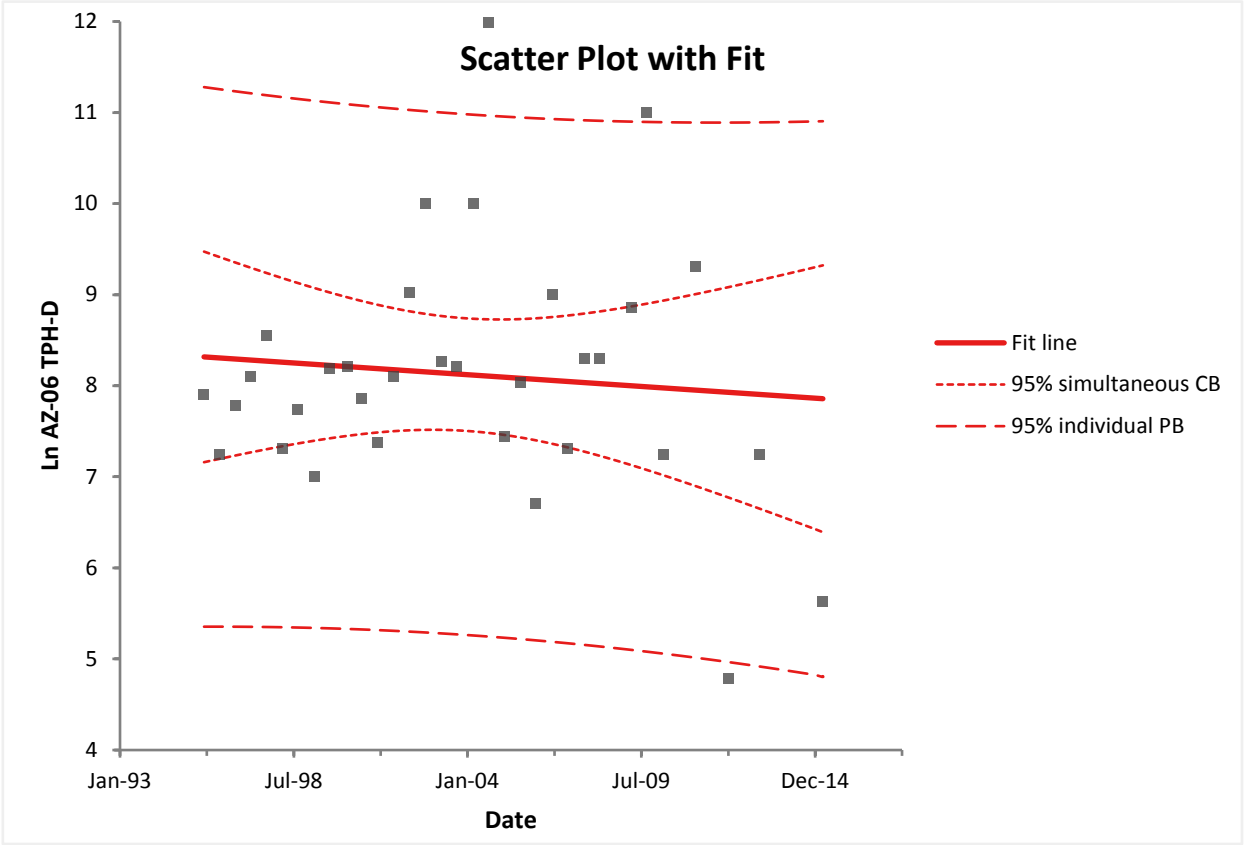


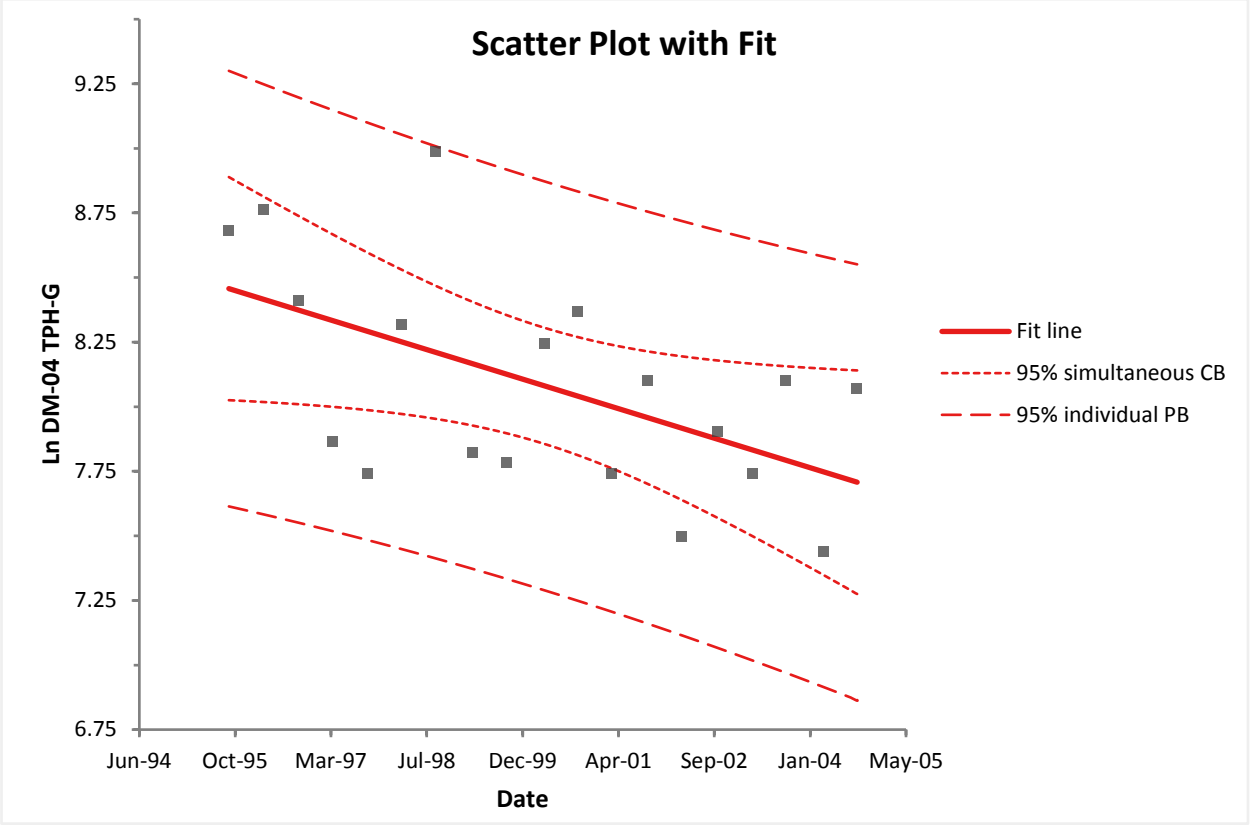
Appendix E. Statistics Graphs
Site SS-34, JBLM McChord Field



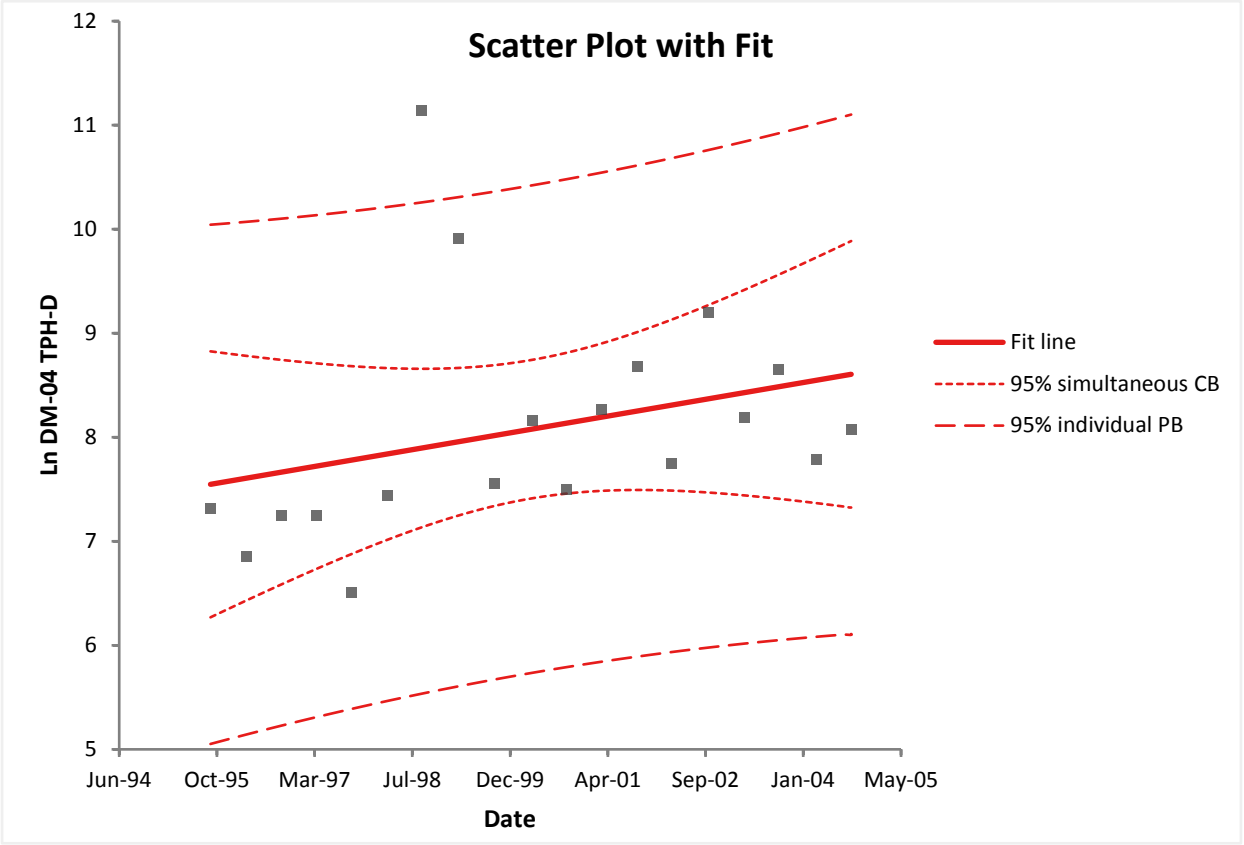


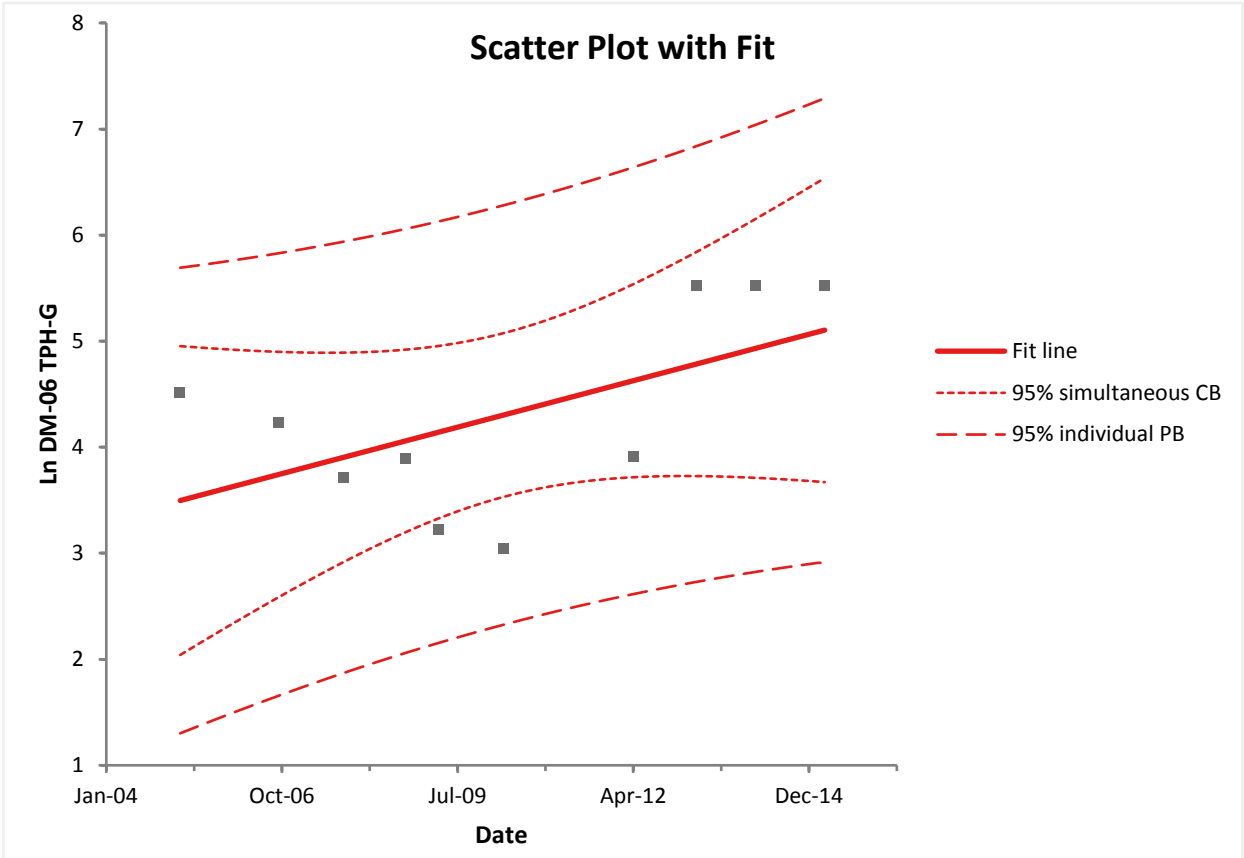
Appendix E. Statistics Graphs
Site SS-34, JBLM McChord Field



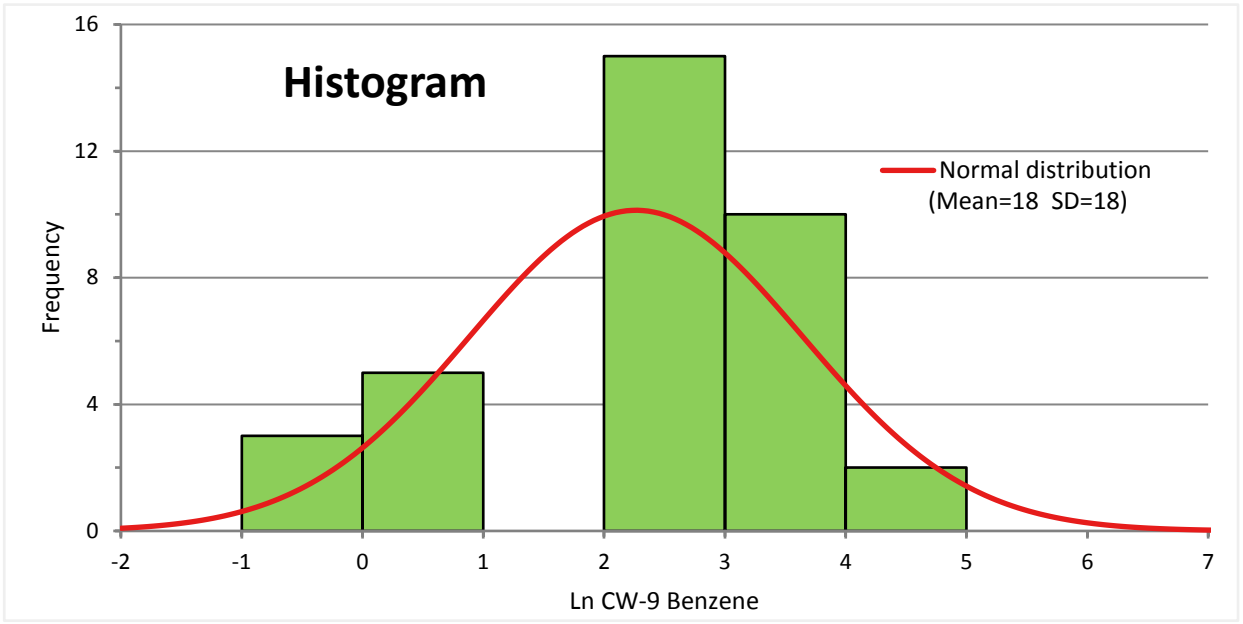


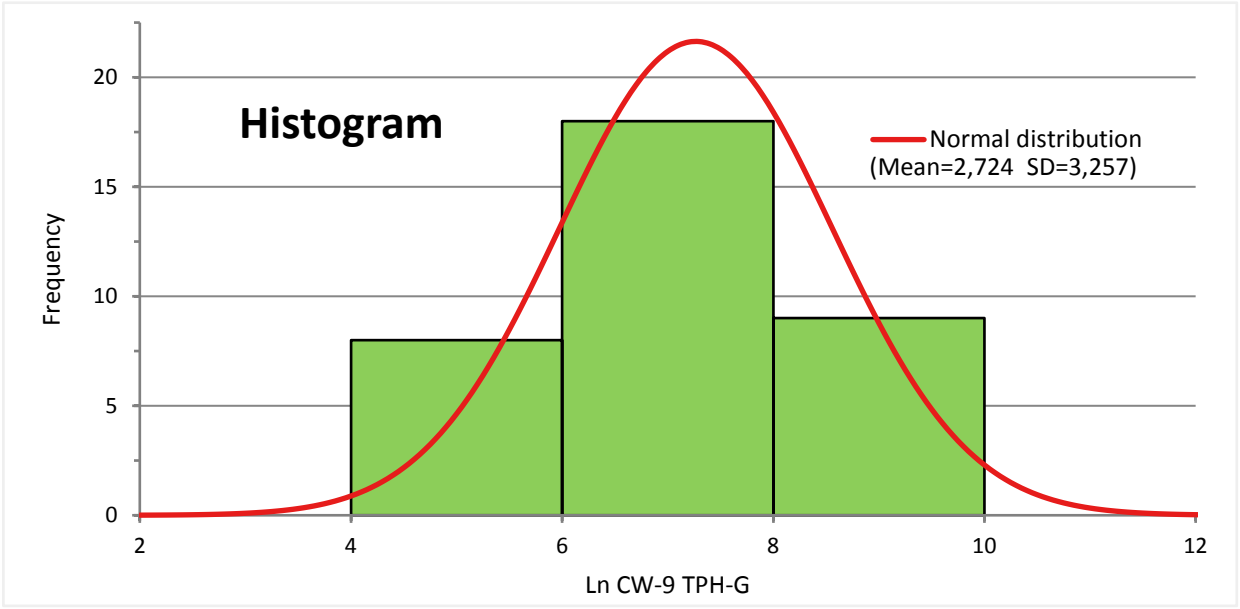
Appendix E. Statistics Graphs
Site SS-34, JBLM McChord Field



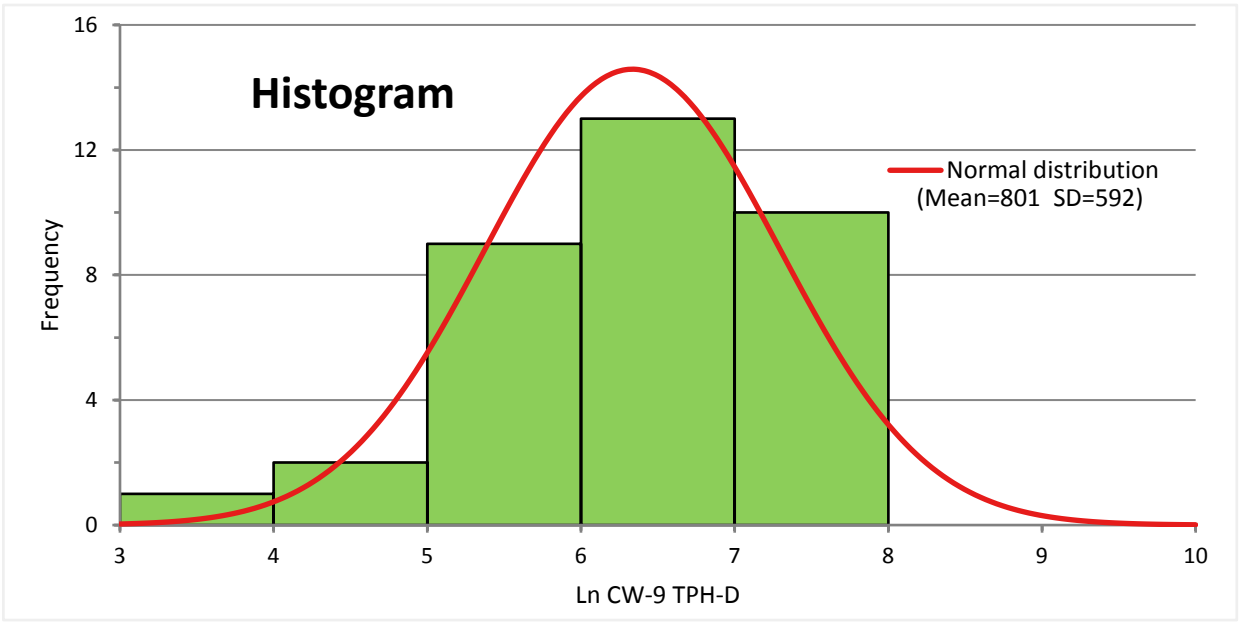


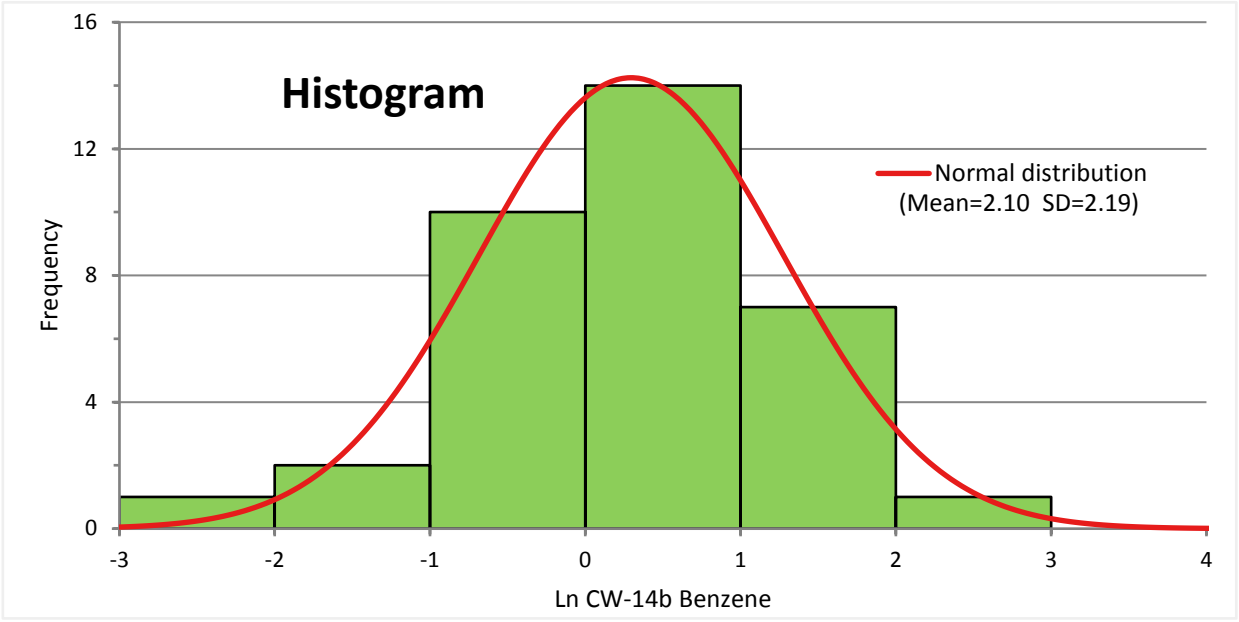
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field



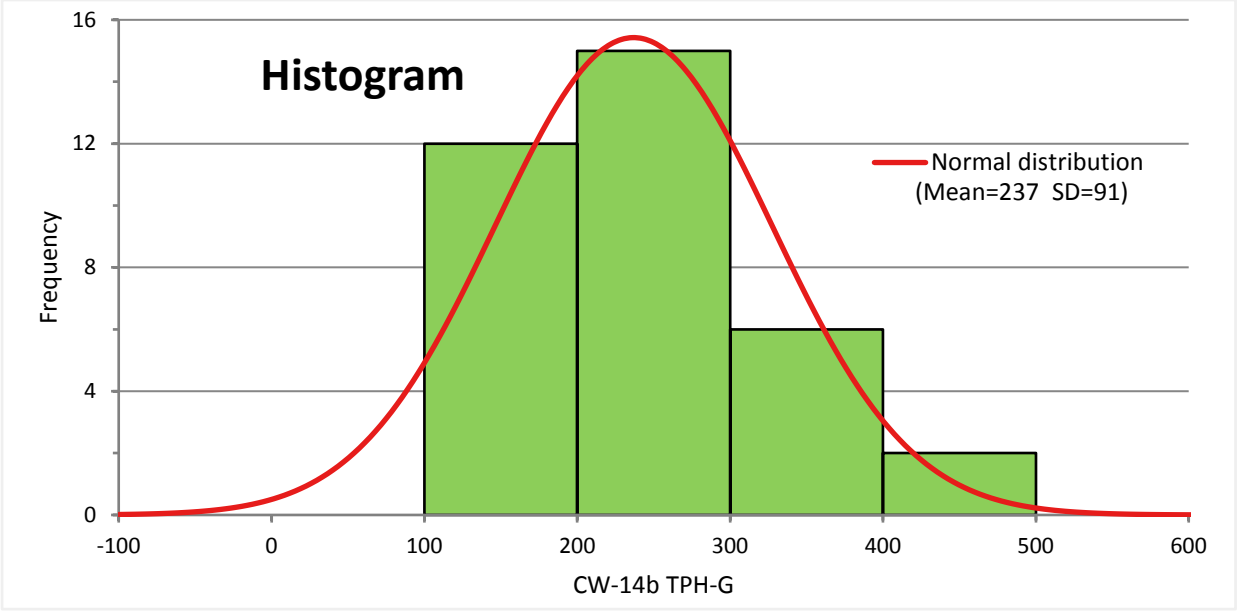


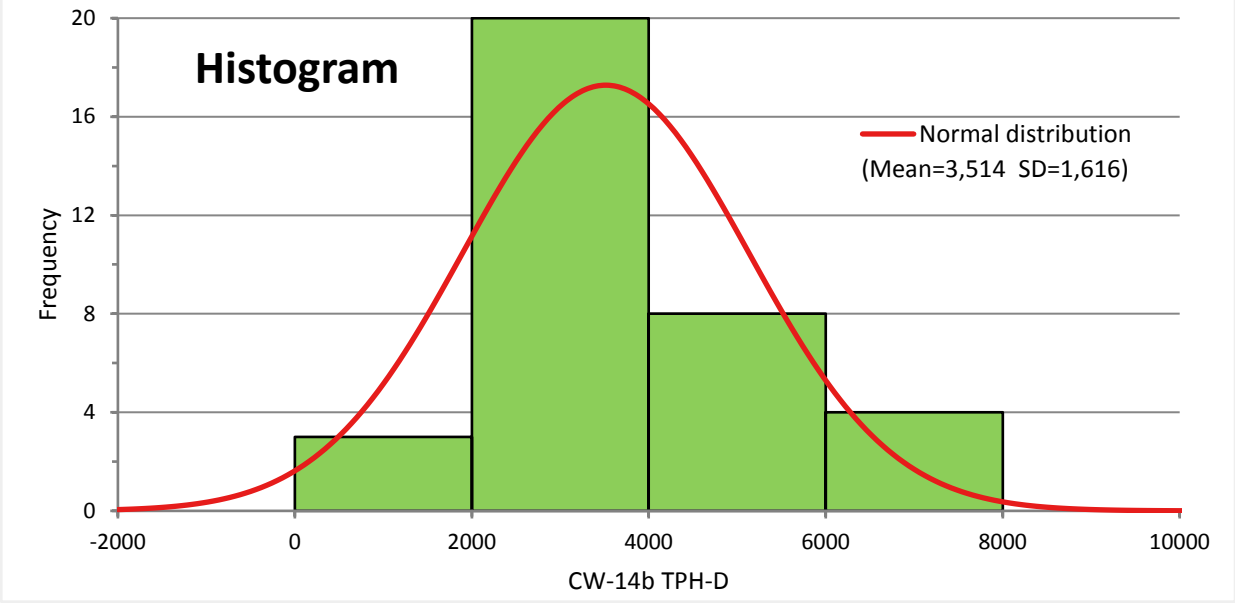
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field



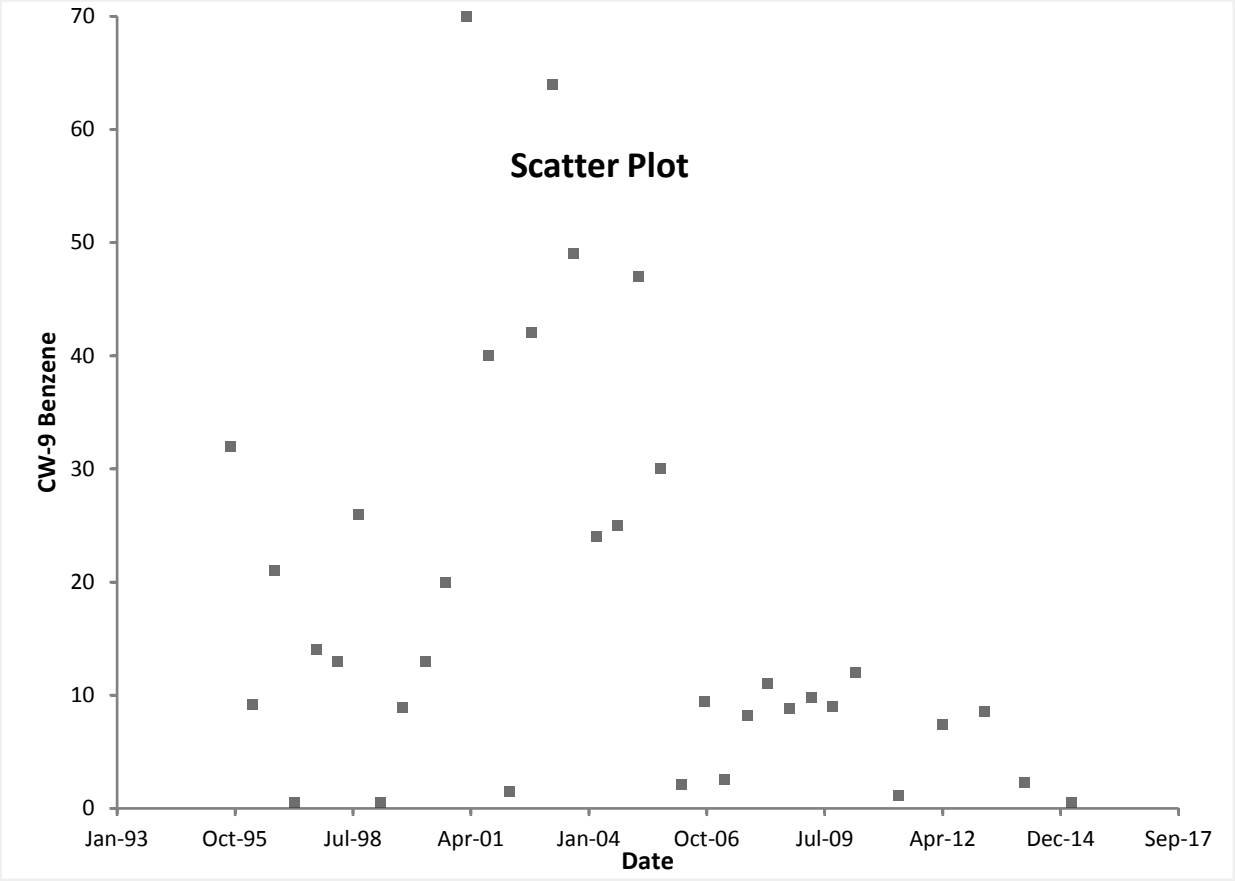


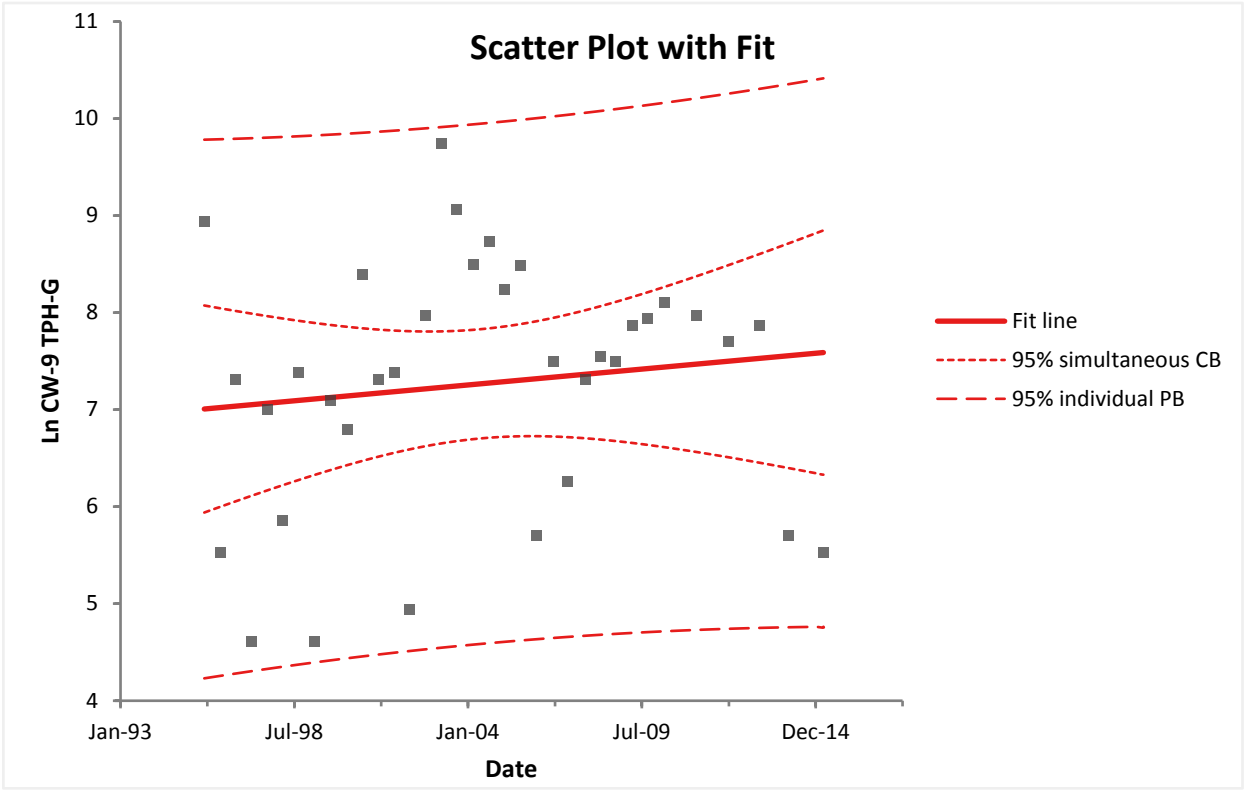
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field



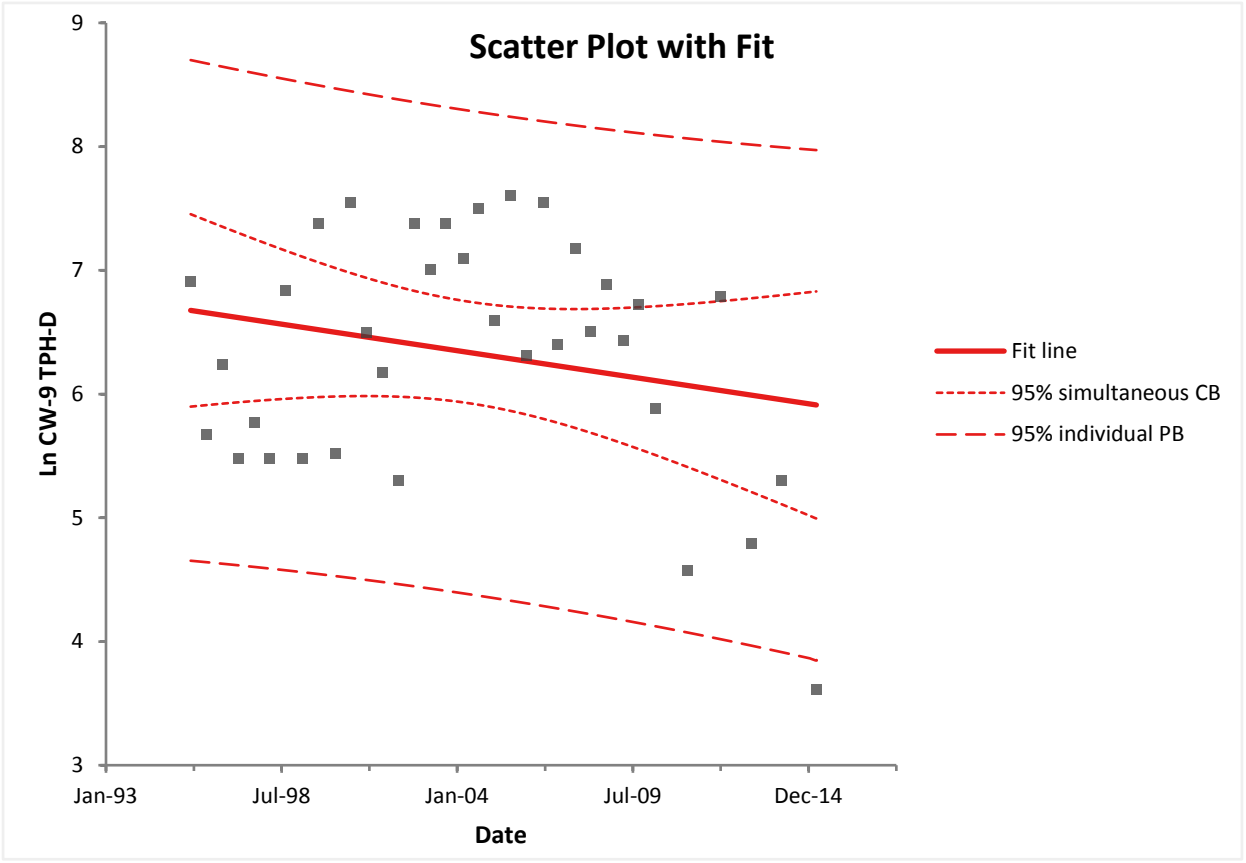


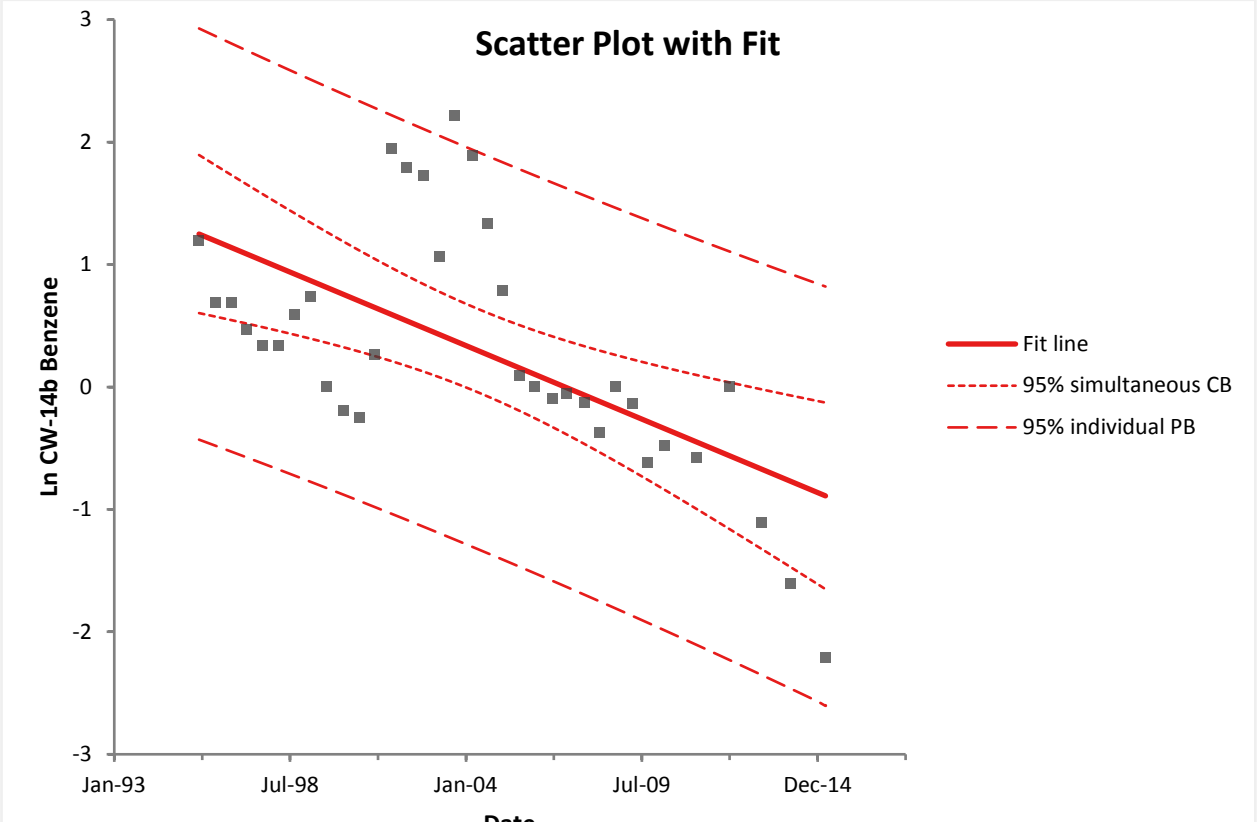
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field





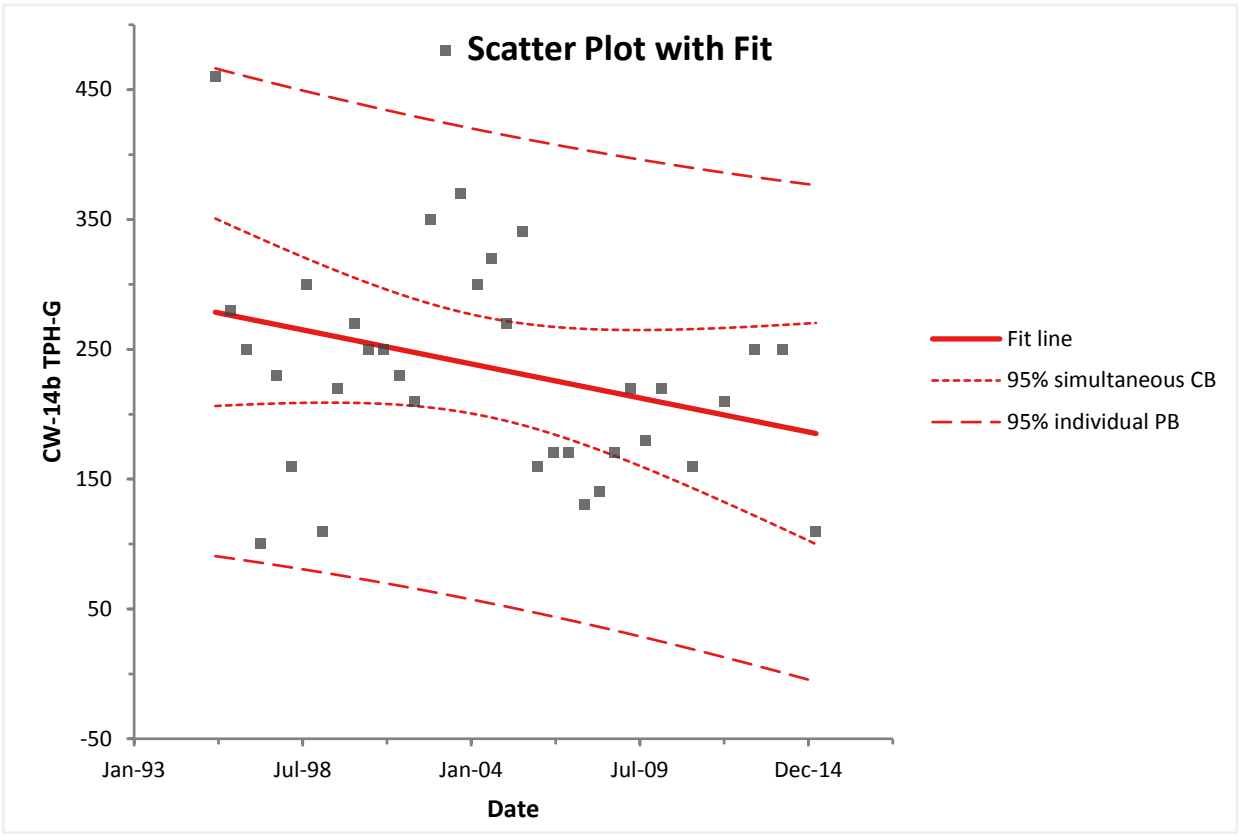
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field

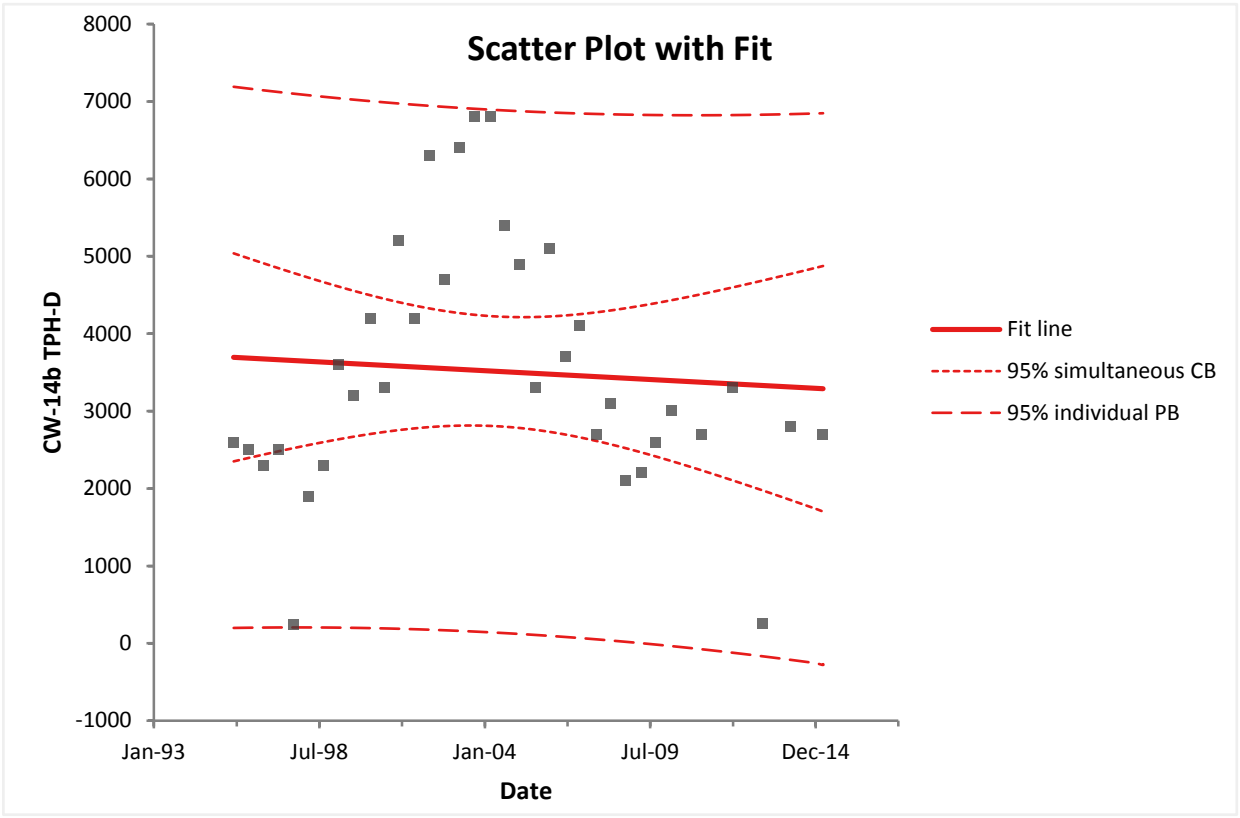




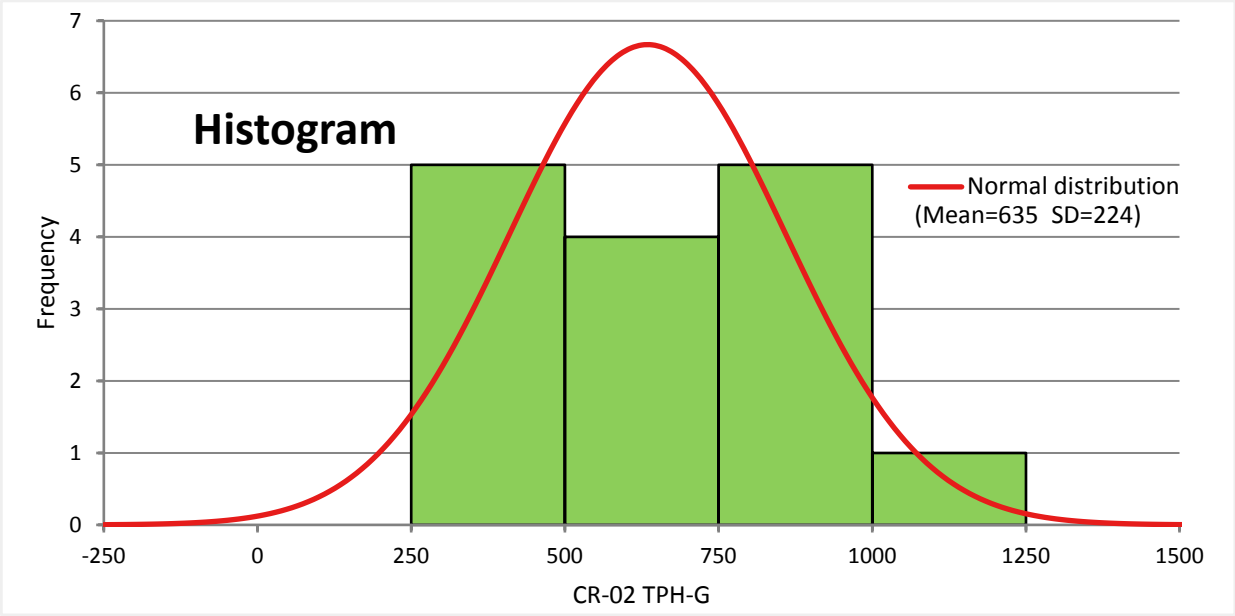
Appendix E. Statistic Graphs
Site WP-44, JBLM McChord Field

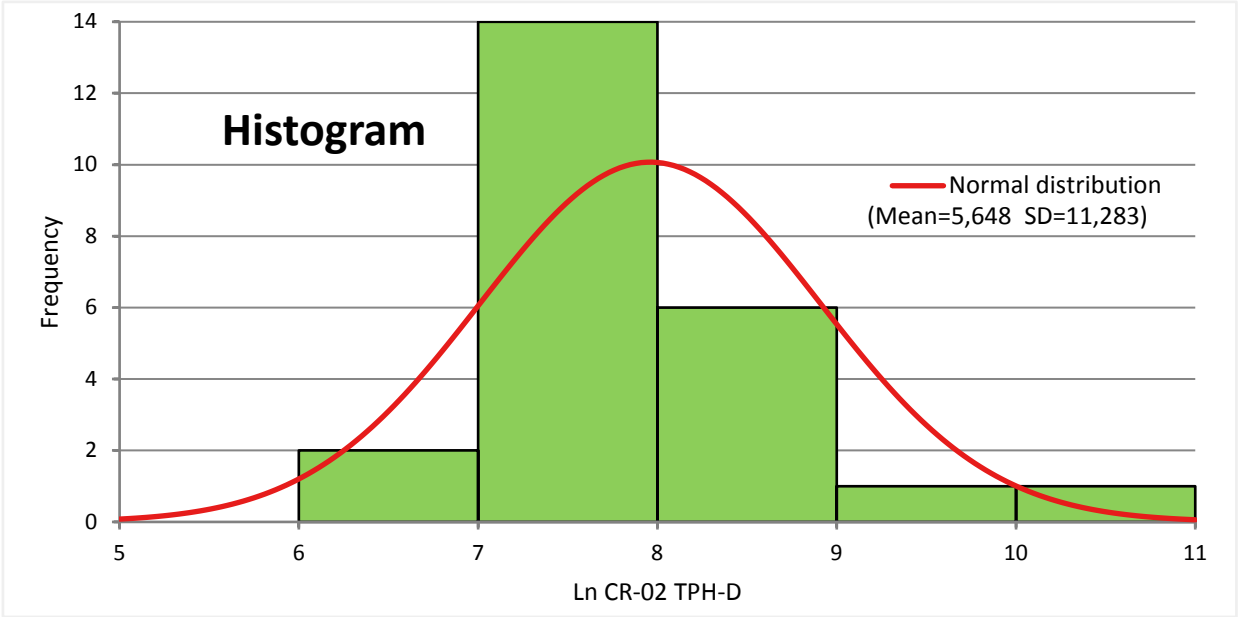
Date



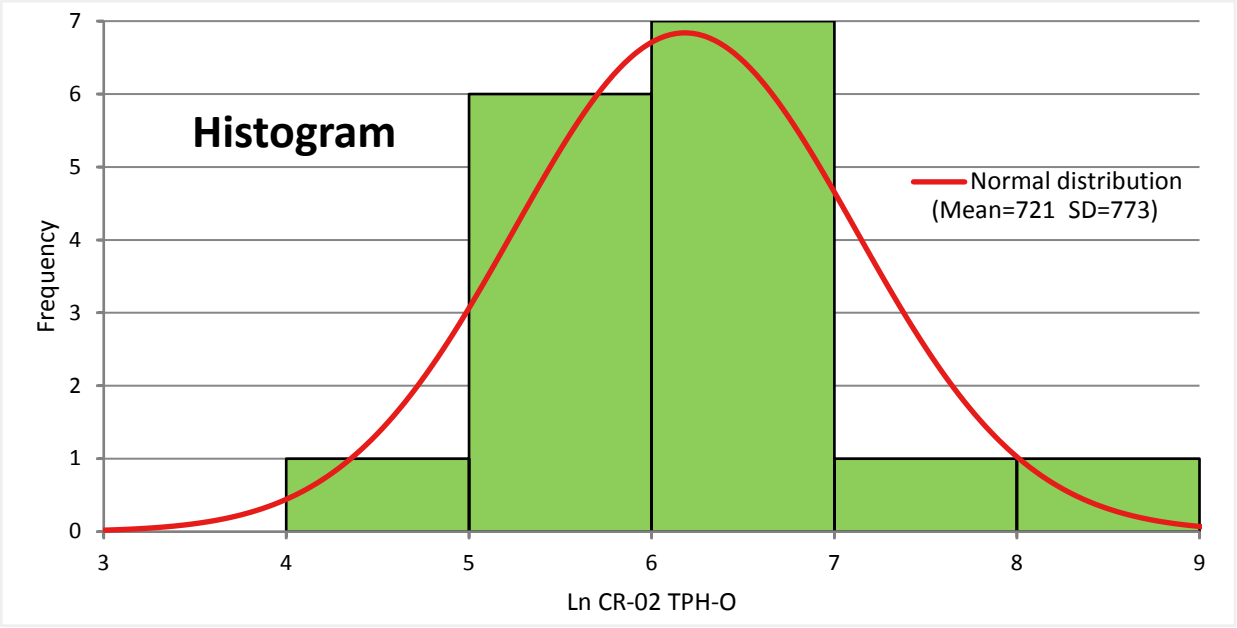


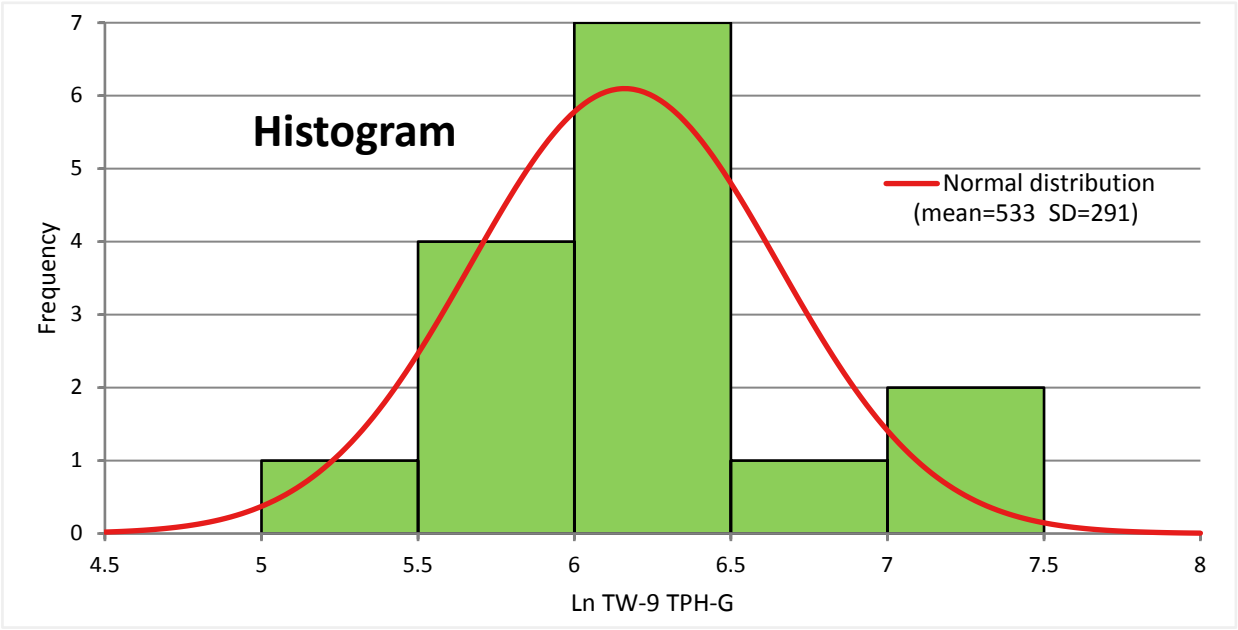
Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field



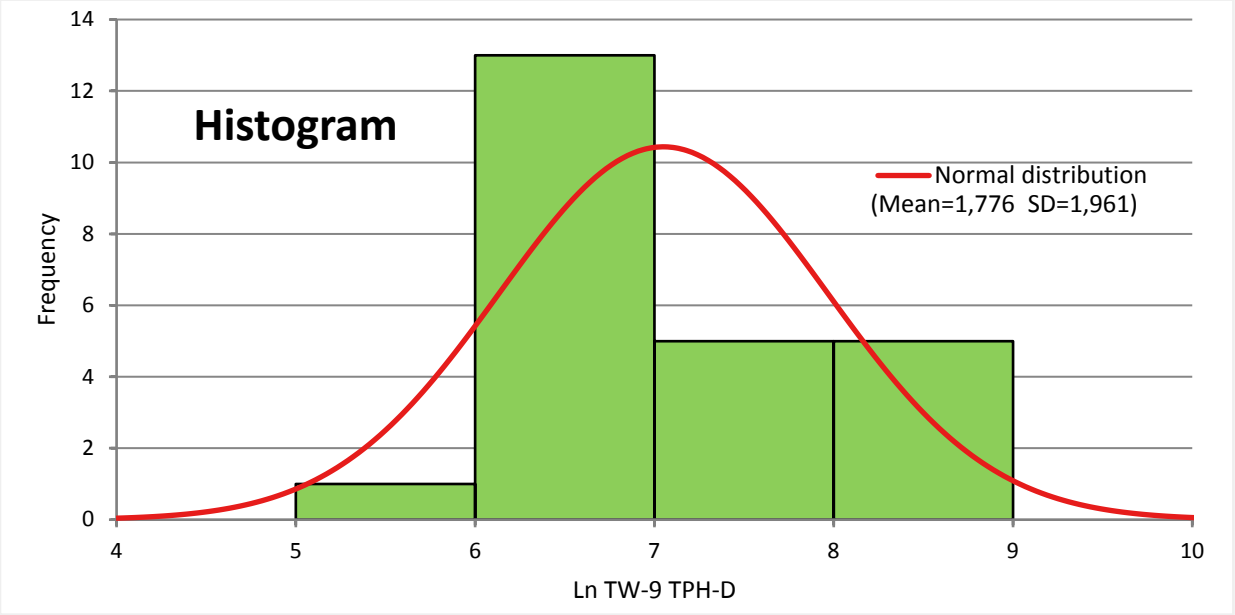


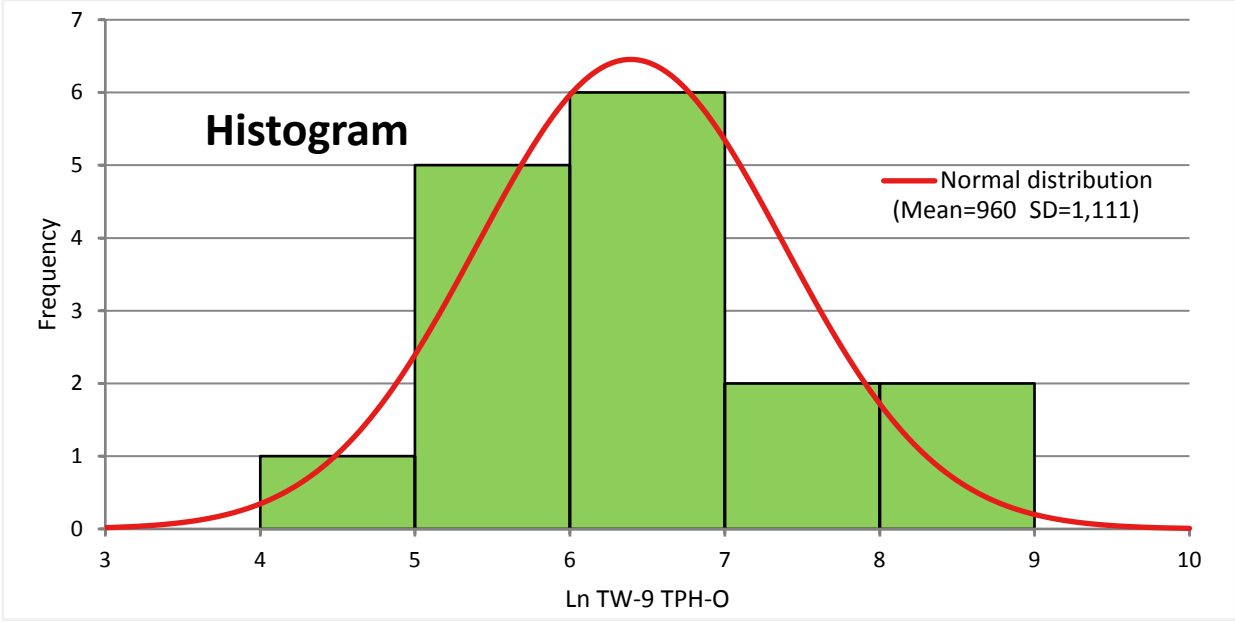
Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field



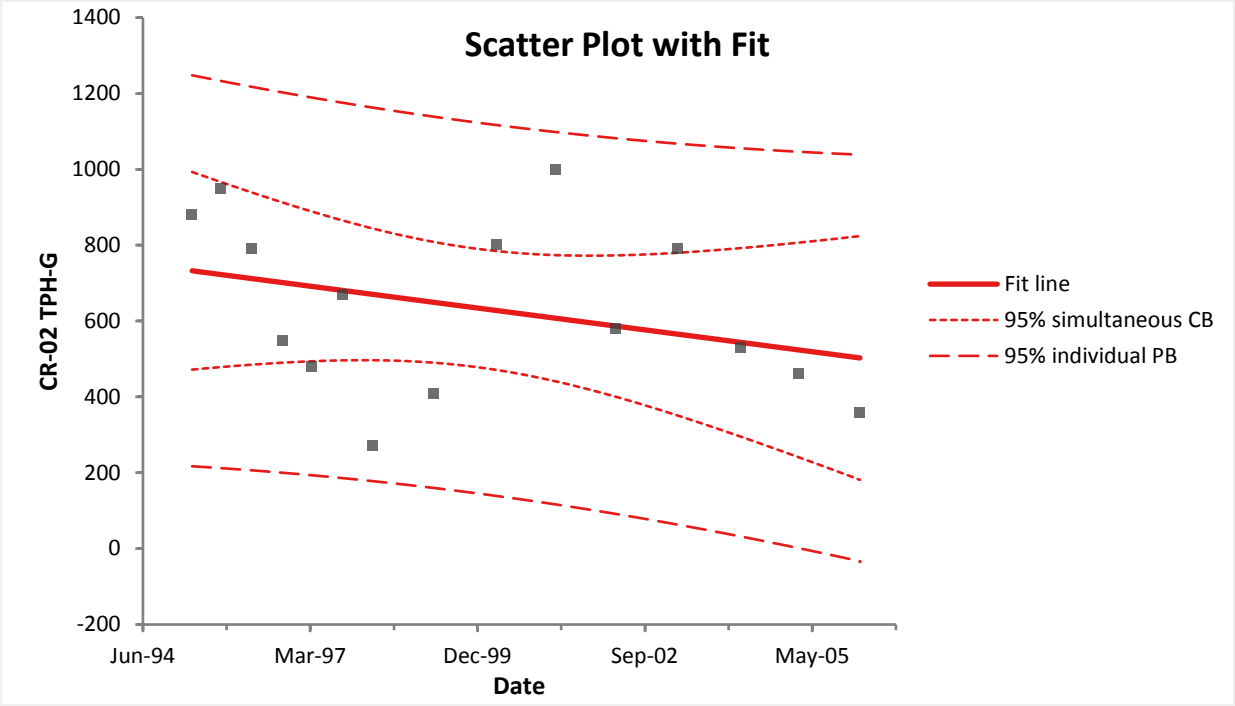


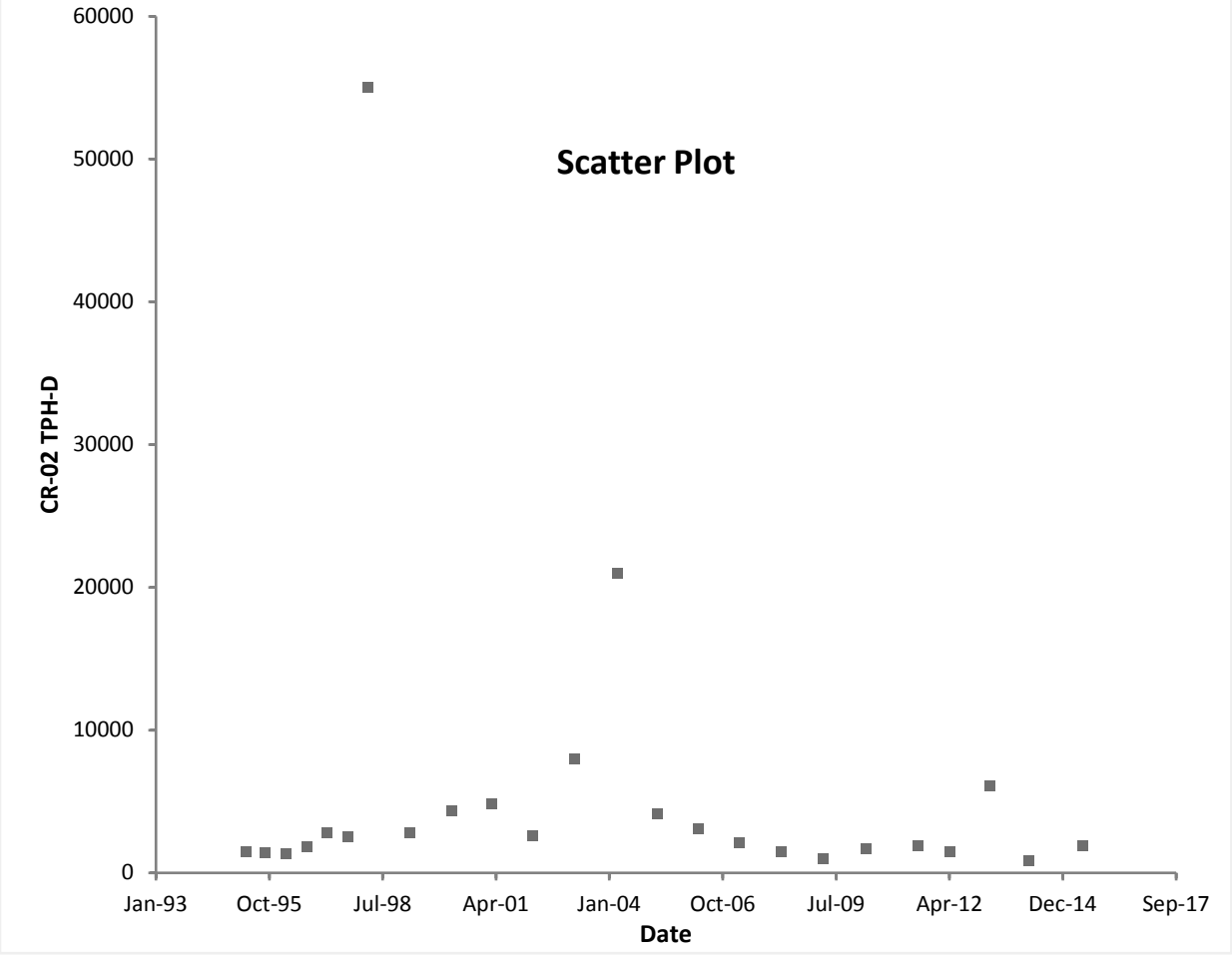
Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field



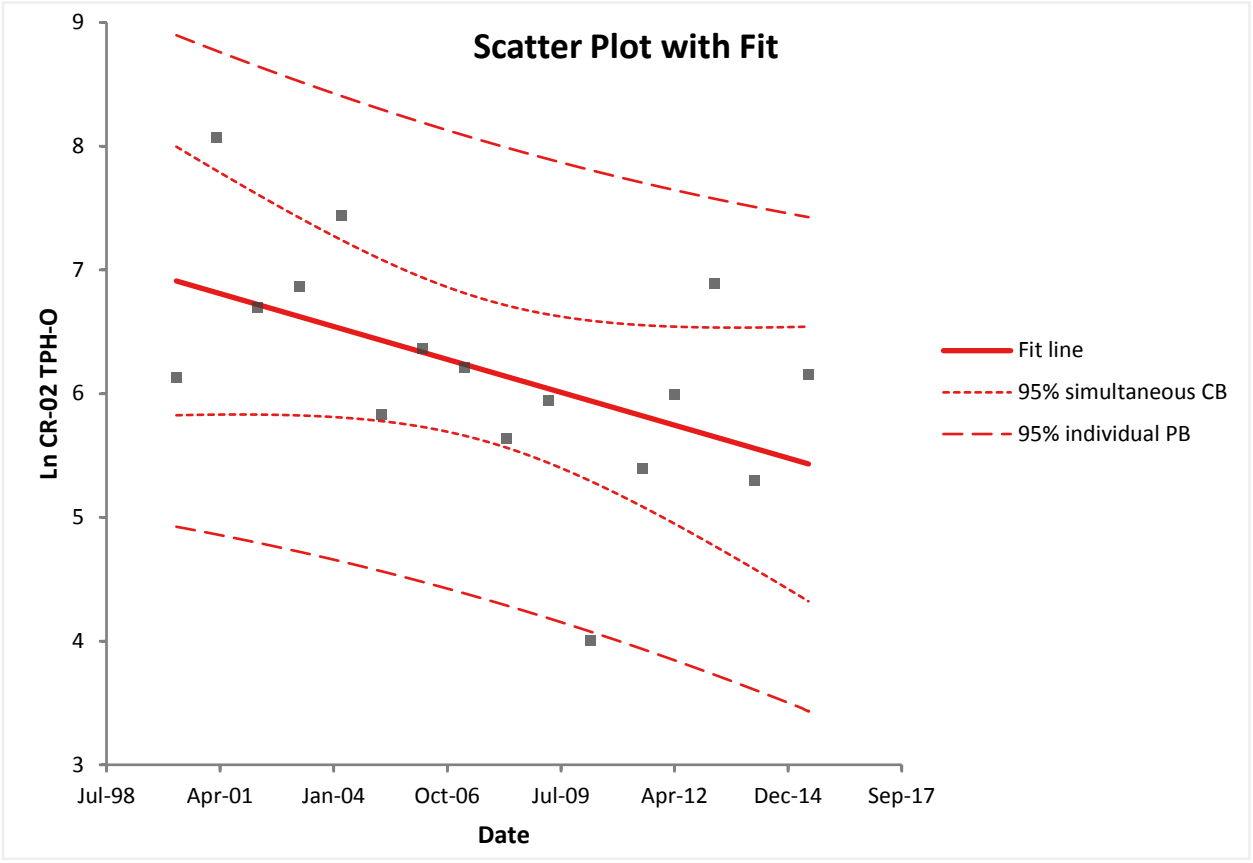


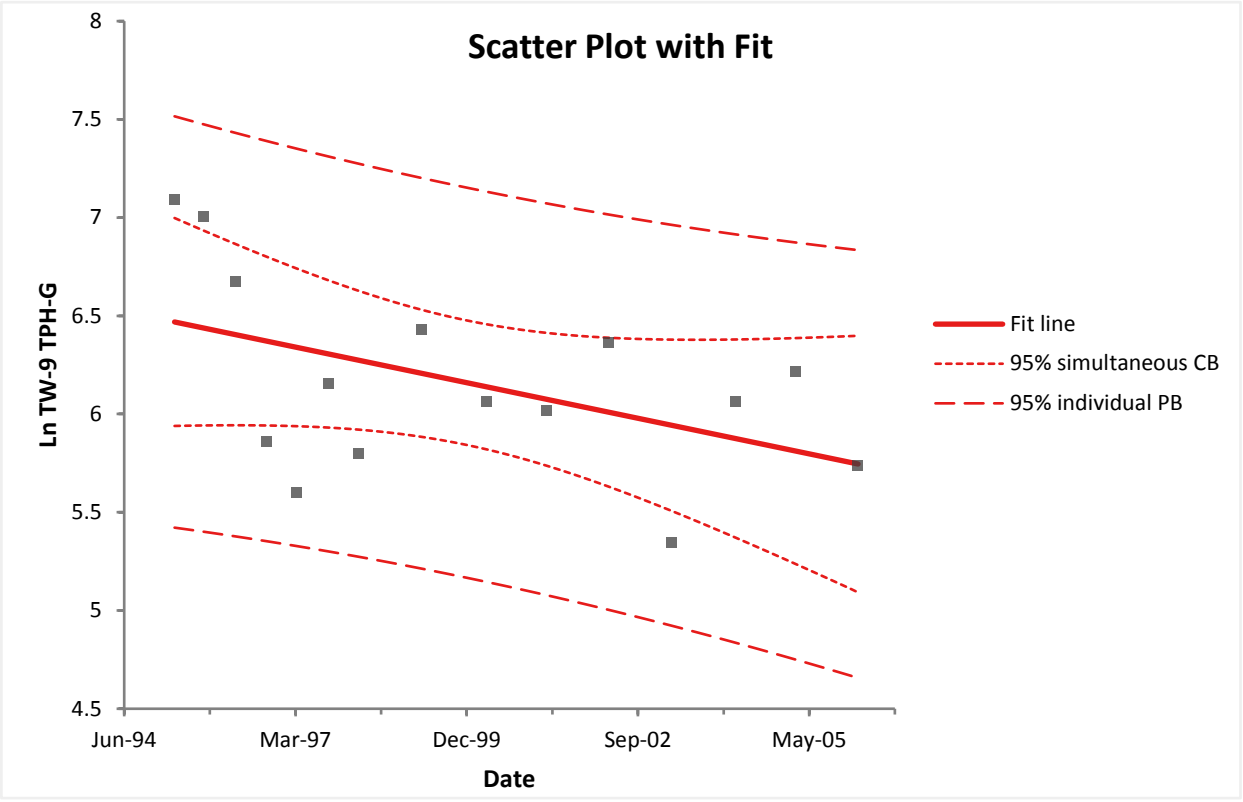
Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field





Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field





Appendix E. Statistics Graphs
Site DP-60, JBLM McChord Field