



July 15, 2014

Mr. Mostafa Mehran
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118

Re: Response to ADEQ Correspondence Dated June 13, 2014
1st Quarter 2014 Progress Report
Whirlpool Corporation
Fort Smith, Arkansas
EPA No. ARD042755389
AFIN No. 66-00048
CAO LIS 13-202

Dear Mr. Mehran:

ENVIRON International Corporation (ENVIRON), on behalf of Whirlpool Corporation, is submitting this response to your June 13, 2014 comment letter on the First Quarter 2014 Progress Report.

Summary of Findings, Review of Activities Completed, 5th Paragraph:

Gallons per minute (GPM) is a measure of flow rate not pressure. Please correct.

ENVIRON Response: This is understood and will be addressed on future reports.

Section 2.2, Monitoring Well Sampling, 2nd Paragraph, 2nd Sentence:

Please provide instrument calibration documentation as an appendix to the report.

ENVIRON Response: The requested information for the First Quarter Progress Report is provided in the field notes from the first quarter monitoring event. The field notes from the first quarter monitoring event are provided in Appendix A. Instrument calibration information will be provided in subsequent reports.

Section 3.1, Hydrogeology, 1st Paragraph:

Significant reduction of TCE concentration in MW-58 during this sampling event indicates that the integrity of MW-58 is likely compromised by the leakage of surface water into the unsecured well. Per ADEQ Monitoring Well Construction Geotechnical Boreholes, and Plug & Abandonment Policy (April 8, 1996), MW-58 should be plugged and abandoned and a replacement well should be installed up-gradient near the abandoned well.

ENVIRON Response: Assuming access is not withheld, MW-58 will be abandoned in accordance with the ADEQ Monitoring Well Construction Geotechnical Boreholes, and Plug and Abandonment Policy and a new well (MW-58R) will be installed just up-gradient of the abandoned well.

Section 3.3.1, VOC Results, Plume Boundary Wells, 2nd Paragraph:

MW-61 with a TCE value of 4.7 µg/L, has shown continuous increases in the concentration of TCE since March 2011 (1.8J µg/L). MW-61 is located off-site in the residential area that has historically been below the MCL. Please include a discussion of the increasing trend in TCE concentration in the First Quarter 2014 Progress Report.

ENVIRON Response: The TCE concentration in MW-61 has slightly increased since the March 2011 sampling event. While fluctuations of the TCE concentrations in MW-61 exist, statistical analysis of the trend of TCE concentrations in MW-61 indicate the concentrations are stable assuming non-detect values correspond to a value of one-half the detection limit.

We are in the process of validating and summarizing the data for the Second Quarter 2014 Groundwater Monitoring Report to be submitted in mid-August. The Second Quarter 2014 Groundwater Monitoring Report will include a statistical assessment of the concentration trends for MW-61 and other monitoring wells. We will continue to monitor the results at MW-61 on a quarterly basis and perform statistical analysis of the concentration trends for MW-61.

See the response to ADEQ's final comment for further discussion of MW-61.

Section 3.3.1 VOC Results, Off-Site Wells, 2nd Paragraph:

The presence of Vinyl Chloride (VC) without the intermediate daughter product of 1,2-DCE combined with extremely low levels of ethane suggest that the reductive dechlorination is not complete and the dechlorination has not reached the final stage of converting VC to ethane. Please address how Whirlpool plans to deal with the issue of accumulating VC in the groundwater.

ENVIRON Response: Although the cis-1,2-dichloroethene (cis-1,2-DCE) results presented on page 7 of the 1st Quarter 2014 Progress Report indicate that none of the results were above the Remedial Action Level (RAL) of 70 micrograms per liter (ug/L), all of the off-site wells that were sampled during the First Quarter 2014 event showed detectable levels of cis-1,2-DCE with the majority of these wells showing cis-1,2-DCE concentrations greater than 5 micrograms per liter (ug/L). Therefore, the intermediate product of reductive dechlorination is present in the off-site wells. In no instance, was VC detected in off-site wells without the presence of cis-1,2-DCE, and the maximum concentration of VC detected in off-site wells was 4.6 ug/L. Low levels of ethane and ethene were observed in the off-site wells because the concentrations of chlorinated volatile organic compounds (cVOCs) and total organic carbon (TOC) are relatively low (less than 0.650 mg/L and 1 mg/L for cVOCs and TOC, respectively) in these wells.

Monitoring for VC will continue during quarterly groundwater monitoring events. If constituent concentration trends suggest VC accumulation is occurring, alternatives will be presented to ADEQ to address the potential issue of VC accumulation in the groundwater in future Quarterly Progress Reports.

Section 3.3.2, MNA Results, Geochemical Lines of Evidence, 2nd and 7th Bullet:

High total organic carbon (TOC) level in MW-58 (32.7 mg/L) is most likely due to the discharge of surface water in the well (see prior comment). This data should be disregarded. The next highest TOC level is 8.9 mg/l at ITMW-4. Organic carbon is the energy source that drives dechlorination and ideally should be at levels greater than 20 mg/l. Only seven (7) monitoring wells were determined to have detectable levels of organic carbon. Please address this issue and explain how Whirlpool plans to deal with the limiting effect of low organic carbon levels in the groundwater.

ENVIRON Response: The elevated TOC level observed in MW-58 is not consistent with the other TOC levels observed in the site groundwater, and therefore, may not be representative of the native TOC levels in this area. Physical issues were also noted with this well in the First Quarter Groundwater Monitoring Report. As noted in a previous comment above, this well is proposed to be abandoned and replaced.

As additional quarterly TOC data is acquired and integrated into the entire site understanding, including the use of Bio-Traps[®] samplers as discussed in the comments below, the potential limiting effect of low organic carbon levels will be addressed in future Quarterly Progress Reports.

Section 3.3.2, MNA Results, Microbial Lines of Evidence, 3rd Paragraph:

The absence of microbial population in the sample results may impact the natural attenuation process occurring at this site. As discussed, Bio-Trap samplers should be utilized to better understand the presence and distribution of microbes at the site. Please devise a plan to address this low microbial population.

ENVIRON Response: To evaluate the presence of the indigenous microbial population in select on-site, off-site and plume boundary wells, Bio-Traps[®], which contain the MICRO sampler, are proposed to be installed in the monitoring wells summarized in the table below. The Bio-Traps[®] will be installed during the Third Quarter groundwater monitoring event scheduled to be performed during the week of July 21, 2014. The MICRO sampler, which is installed within the Bio-Trap[®], contains Bio-Sep[®] beads, which provides a matrix for the indigenous microbial population to adhere to and grow to a concentration that is more representative of the microbes attached to the aquifer sediments. Prior to installation of the Bio-Traps[®], the groundwater will be sampled and monitored for the parameters required as part of the quarterly sampling event except for the parameters to be tested in the Bio-Sep[®] beads. The Bio-Sep[®] beads will be tested for the microbial population *Dehalococcoides* and *Dehalobacter*, and the genes: BAV1 Vinyl Chlorate Reductase (BVC), VC Reductase and tceA reductase; the former two are responsible for VC biodegradation and the latter one is responsible for TCE biodegradation.

Once a baseline has been established for the microbial and gene parameters, we propose to monitor the wells listed in Table 1 to provide an understanding of the native microbial population over time. These monitoring wells would be sampled in lieu of the full list of

plume boundary wells, on-site wells, and off-site wells to be analyzed for the MNA indicator parameters of Volatile Fatty Acids, *Dehalococcoides*, and Vinyl Chloride Reductase as written in the Remedial Action Decision Document (RADD) as sampling for these parameters would be redundant.

Table 1

WELL NUMBER	TYPE OF WELL	PURPOSE OF BIO-TRAP
ITMW-19	On-Site	Evaluate the impact of elevated cVOCs (8 to 9 mg/L TCE) levels on indigenous microbial population
ITMW-38	On-Site	Evaluate the impact of mid-range chlorinated volatile organic compounds (cVOCs) (1-2 mg/L TCE) levels on indigenous microbial population
MW-65	On-Site	Evaluate the impact of low- to mid-range cVOCs (0.1-0.3 mg/L TCE) on indigenous microbial population
MW-46R and MW-56	Off-Site	Evaluate the impact of mid-range cVOCs (0.5-0.7 mg/L TCE) levels on indigenous microbial population in off-site area
ITMW-6 and ITMW-10	Plume Boundary (South)	Evaluate the impact of low (<0.005) and mid-range cVOCs (0.1 – 0.2 mg/L TCE) on indigenous microbial population.
MW-60	Plume boundary (North)	Evaluate the impact of low levels of cVOCs (< 0.005 mg/L TCE) on indigenous microbial population.

Figure 3:

ADEQ is of the opinion that the 5 µg/L contour line should be much closer to MW-61. Please reconstruct the isopleth map presented to be more representative of the actual TCE concentration.

ENVIRON Response: The depiction of the 5 µg/L contour in the 2014 First Quarter Groundwater Monitoring Report is based upon the laboratory results for the full set of boundary monitoring wells in addition to the results from MW-61. The slight increase in TCE concentrations in MW-61 over the last three years, if it continues, will be used to adjust the 5 µg/L contour in future depictions, as appropriate. Variations in TCE concentrations in groundwater in respective monitoring wells and the corresponding fluctuations in plume boundaries are expected; however, the general trend of average TCE concentrations in groundwater samples collected throughout the affected area continues to trend downward

indicating overall TCE mass reduction. Groundwater monitoring on a quarterly basis will continue.

The isoconcentration contours are illustrative depictions used to provide guidance in visualizing the occurrence and concentration of constituents in groundwater between and beyond data points but do not imply certainty where data are extrapolated.

-oo0oo-

If you have any questions or comments please contact me at your earliest convenience.

Sincerely,

ENVIRON International Corporation



Michael F. Ellis, PE
Principal

LIST OF APPENDICES

Appendix A: Instrument Calibration Documentation

APPENDIX A: Instrument Calibration Documentation

CONTENTS

PAGE

REFERENCE

DATE

20°F Partly Sunny Windy Stone Street
Wind from ECLY Tamara-Husc Knight March 5, 2014

645 - Arrive on site.

- Had health & safety meeting

745 - Packed & organized equipment for day and sampling event. Calibrated equipment.

810 - Mob to off site residential property to gauge wells.

- Gauged all wells on residential building property.

10:00 - Mob to south of Ingersoll wells gauge.

- Gauge last wells on site.

12:00 - Mob to Boiler room on Whirlpool site and load sampling equipment.

1240 - Mob to well MNW-20 - and set up.

13:00 - Begin flow through.

Sample parameters: MNA, VDCs

13:27 - Attempted to take Hydrogen Sample. Failed to do so. In order to take sample pump is required to be shut off. This prevents continuous readings of field parameters.

1425 - Took field sample TMW-20-201403

1455 - Mob to boiler room to pick up sample containers

WBS

2 35.0 F Sunny
Whirlpool Ft. Smith WES/THK March 5, 2014
1545 - Mob to MW-22.

- Began purge.

16:30 - All parameters were within ^{US} calibration range.

16:35 - Took sample of MW-22-201403.

16:45 - Victoria Siegler joined at MW-22 to finish well.

17:20 - MOB to boiler room on site to pack coolers.

17:28 - Began separating samples, made ice packets for coolers and filled out COCs for PACE, Microbial Insights & Microseps.

1830 - ENVIRON off site.

Wendy Stonestreet

35° Sunny Wendy Stonestreet
Tanner Halse-Knight
Whirlpool, Fort Smith AR. March 6, 2014

6:50 - Arrive on site.

- Have H&S meeting, Calibrated equipment.

- Pack supplies & head to MW-68

7:30 - Set up on well.

8:00 - Wendy went to the boiler room on Whirlpool property to get Helium detector & cannister.

8:30 - Brought Denovo contractor helper to Colin to assist with sampling.

9:00 - Set up vapor point.

- Installed Swagelok connectors to vapor points. Red tape is the deep set well, silver tape indicated shallow point per Mike Eddings who installed the wells.

9:10 - Purged 3 well volumes of air from each point using vapor pump.

- Appears that the points are clear (No water).

- Set-up leak-(shroud) test using Helium as a tracer gas.

- Helium in shroud = 20%

- No Helium detected in either line.

- Performed leak test on cannister

Wendy Stonestreet

48° Sunny WES/THK
Whirlpool, Ft. Smith

March 16, 2014

lines. Found leaks. Tightened all connections. Leak test passed. All connections good.

- turned both valves again to open position.

- Regulator Deep = 0A1418

Shallow = 0A00583

Cannister ID = Deep = 00534 (SC00058)

Shallow = 00372 (SC00293)

10:40 - Opened Cannisters

Shallow = -27" Hg

Deep = -29" Hg

10:57 - Moved back to MW-40 where Tamara had set up well at 10:25.

- Tamara took samples at MW-68 at 8:40. MW-68-201403

11:20 - Chris Witter from Denovo arrived on site. Informed us a sample cooler arrived.

11:35 Took sample MW-40-201403

12:17 Checked vapor points
Shallow @ -17"

12^{was} Deep = -22"

12:45 - Checked Mob off site
Shallow = -16
Deep = -21

Wendy Stone

63° Sunny Whirlpool, Ft. Smith WES/THK March 16, 2014

1200 - Set up at MW-72

- Purged well until parameters stabilized

1405 - Took samples at MW-72-201403

1500 - Vapor points read

Shallow = -6" Hg

Deep = 16" Hg

1515 - Set up at well MW-36

1542 - Shut off shallow vapor point. Final reading -5" Hg 1SV-1-Shallow

Deep vapor point = -15.5" Hg

1555 - Took sample at MW-36-201403

16:45 - Moved to well ID MW-39

- Began purge.

- Checked on Deep Vapor point

Deep = -14.5" Hg

1735 - Well stabilized took gw samples at

1735 MW-39-201403

18:45 - Mob to boiler room to ship samples.

- Packed coolers and attempted delivery to FedEx. Missed FedEx delivery by 3 minutes.

19:00 - Checked deep vapor point on offsite w/p property 14.5.

19:05 - left site to get dinner.

Wendy Stone

Whirlpool, Ft. Smith

42° Dark

WKS/THK

March 6, 2014

2120 Returned to offsite WP property to
check deep vapor point. Deep vapor
point read -12.5" Hg. Shut off

Summa at 2125 and tore down set-

up. 15V-1-Deep

2130 - ENVIRON off-site

WKS

Wendy Sturtevant

36° Sunny Slight breeze

Windy Stonestreet

Whirlpool, Ft. Smith

March 7, 2014

6:45 - Arrive on site.

- Have H&S meeting. Slip/Trip/Fall

- Calibrate equipment - All equipment calibrated

- Mob to MW-27

8:00 - Set up at well MW-27

8:15 - Start set-up at Vapor Point on Whirlpool
Site. Installed Swagelok connectors.

- Shallow point is filled with water.

- Deep point is clear of water.

8:45 - Performed helium leak test. Helium in shield
29%.

- Performed leak test on canister & tree. Leak
test passed.

- Purged well for approximately 5 minutes.

9:20 - Opened Summa canister on Deep Well

- Regulator reading = -27.5" Hg Summa SLO1865

9:25 - MOB to MW-16

- Tamara took sample at MW-27-201403
at 850. (MNA & VOCs)

9:30 - Checked vapor point of deep Whirlpool well.
-25.5" Hg

9:35 - Set up at MW-16.

- Stabilize well

10:45 - Took samples at 10:45 (MNA & VOCs)

Wendy Sturtevant

Whirlpool Ft. Smith WESTTHK March 7, 2014

- 11:35 - MOB off site to take break and get ice
- 11:45 - Checked with Colin to see if he was doing okay, and needed ice.
- 12:05 - Returned on site and packed coolers with ice and taped coolers up for shipping.
- 12:45 - MOB to MW-56
- 1320 - Begin Set-up on well.
 - Purged well for several minutes and took first reading.
 - Well went dry at screened interval of 5' above the bottom of the well.
- 1354 - Allowed well to recharge for 25 minutes and took sample.
 - Sample MW-56-201403
- 1400 - Spoke to resident with locked yard due to 3 dogs and 1 pig. The resident unlocked the gate.
- 1420 - Set up on well MW-46R
 - Began purge
 - Well became stable, began taking samples (vocs)
 - Colin arrived to ask about sample bottles and left several minutes later
- 1515 - Took sample - MW-46R-201403
- 1600 - MOB to IW-74
- 1600 - Began to take readings at IW-74

Wendy Stewart

Whirlpool Ft. Smith WESTTHK March 7, 2014

1630 - Well stabilized and took first sample

IW-74-201403 ← Dup-2

- 1700 - MOB to IW-73
 - Set up at well.
 - Walked over to vapor point on Whirlpool site in order to check vapor point. Summa regulator read 17.5" Hg.
- 17:15 - Returned to well IW-73.
 - Continued to take readings at IW-73
- 1755 - Took sample at well IW-73-201403
- 1810 - MOB to help Colin at adjacent well clean up well site.
- 1845 - MOB to Boiler room on Whirlpool property.
 - Plug in equipment
 - Pack coolers and put samples on ice.
- 1900 - Checked on Summa canister at deep well on Whirlpool property. Summa regulator read 15.5". Decided to let Summa stay on overnight since flow rate was very slow.
- 1905 ENVIRON off site

Wendy Stewart

Whirlpool, Ft. Smith AR

March 8, 2014

0645 - Arrive on site

- Drove to vapor point location to check Summa canister on deep point on Whirlpool Property.
- Read out on regulator was -12.5 Hg. Water could be observed in the line in increments.

- Stopped the Summa at 7:15 am. Disconnected summa and returned to the boiler room. 5V-2-Deep

- Calibrated VSI for sampling day.

7:45 - MOB to MW-33

- Set up at well.

- Stabilized well

9:10 - Took sample MW-33-201403 (VOCs)

9:30 - Went to store to get gas for vehicle and get ice for the cooler.

9:45 - Returned to site.

10:00 - Set up on monitoring well MW-35R.

- Stabilized well.

10:55 - Took sample MW-35R-201403

11:20 - Moved to well 1W-80

11:30 - Began purge

- Well water is very dark purple

12:20 - Well is having trouble stabilizing

Wendy Stonestreet

Whirlpool, Ft. Smith

March 8, 2014

1245 - Well water is clear, but after 1 hour well is likely not going to stabilize for conductivity parameters.

1250 - Took sample 1W-80-201403 4 MS/MSD

1310 - Off-site for break.

1320 - Returned to boiler room area and dumped purge water.

- Organized samples.

1400 - Set-up on monitoring well ITMW-11

1420 - Began purge.

- Stabilize well

1505 - Took sample ITMW-11-201403 8 MS/MSD

1525 - MOB to MW-17

1600 - Began Purge

- Stabilized well

1630 - Took Samples MW-17-201403Dup-3EB-2-201403WCS
17:10

1645 - Broke down well & dumped purge water.

- Returned to boiler room. Organized samples & prepared coolers for shipping

18:45 - ENVIRON off-site

Wendy Stonestreet

Wendy Stonestreet

12 39° Cloudy

Wendy Stonestreet

Whirlpool, Ft Smith AR

March 9, 2014

7:45 - Arrived on site

- Had health & safety meeting, Calibrate.
- 8:00 - Watched video on Bubble Stripping for Hydrogen analysis.
- Prepared stands and packed equipment for the day's work.
- 8:45 - MOB to MW-28.
- Set up bubble stripping stand.
- Purged water from well to reach 200 mL/min.
- Followed Bubble Stripping procedures
- 9:25 - Took sample MW-28-201403 (Hydrogen)
- 9:45 - Went off site to find Victoria & Colin to get stop-cocks & labels. Gave them additional strip jar as they indicated theirs was broken.
- 9:50 - Set up on MW-27
- Set up stand & purged water at 200 mL/min.
- 10:27 - Took sample MW-27-201403 (Hydrogen)
- 10:35 - MOB to ITMW-16-201403
- Set up stand and purged water @ 200 mL/min
- 11:12 - Took sample ITMW-16-201403 (Hydrogen)
- 11:20 - ^{took} Purge water to purge tank to drop off.

Wendy

45° Cloudy

Wendy Stonestreet

Whirlpool, Ft Smith AR

March 9, 2014

- 11:35 - MOB to MW-22
- Set up stand at well and purge well @ 200 mL/min.
- 11:54 - Took sample MW-22-201403 (Hydrogen)
- 12:10 - MOB to ITMW-2. Well is under tank, partially.
- Set up stand at well & began purge.
- 12:35 - Took sample ITMW-2-201403 (H)
- 12:50 - MOB to MW-26
- Set up stand at well and purge well @ 200 mL/min.
- Pump stopped and had to restart process
- 13:26 - Took sample MW-26-201403 (H)
- 13:35 - MOB to ITMW-20
- Set up stand at well and purge well @ 200 mL/min
- 13:55 - Take sample ITMW-20-201403 Hydrogen
- 14:05 - MOB to MW-29
- Set up stand at well and purge well @ 200 mL/min
- 14:34 - Take sample MW-29-201403 Hydrogen
- 14:40 - MOB to ITMW-6
- Set up stand at well and purge well

Wendy Stonestreet

14 Whirlpool, Ft. Smith Arkansas

50°

WES

March 9, 2014

@ 200 mL/min for 20 min.

1509 - Take sample / ITMW-6-201403

1515 - MoB to ITMW-4.

- Set up stand and set purge rate at 200 mL/min.

1545 - Take sample / ITMW-4-201403

1600 - MoB to boiler room to pack coolers.

- Packed equipment for trip home.

-- Organized area and took out the trash. ^{cooler}

18:10 - Met courier to hand off samples

18:15 - ENVIRON offsite.

Wendy Schaefer

Wendy Schaefer

3/5/14 Whirlpool cont

- 949 starting to stabilize (MW-22)
 951 MW-22 $\bar{x}$ 12.55
 1006 MW-26 $\bar{x}$ 14.77
 1011 ITMW-20 $\bar{x}$ under pressure allowing
 to stabilize.
 1015 still stabilizing
 1017 still stabilizing
 1025 ITMW-20 $\bar{x}$ 14.63
 1040 MW-20 $\bar{x}$ 12.25
 1053 MW-30 $\bar{x}$ 16.70
 1108 ITMW-21 $\bar{x}$ 13.57
 1119 Remark ITMW-11, ITMW-15,
 MW-38+37 well covers for
 easy ID.
 1124 At ~~ITMW-11~~ ITMW-11 had to clean out
 H₂O, well under pressure
 1130 ITMW-11 $\bar{x}$ 11.39
 1140 MW-37 $\bar{x}$ 10.90
 1144 MW-38 $\bar{x}$ 11.97
 1149 ITMW-15 $\bar{x}$ 11.74^{us}
 1156 ITMW-17 $\bar{x}$ 15.38
 1204 ITMW-18 $\bar{x}$ 11.14
 1221 MW-27 $\bar{x}$ 12.73
 1230 At locker room prepare for VS
 Sampling.

3/5/14 Whirlpool cont

- 1300 On ITMW-20 w/ WS+THK to view
 bubble stripping.
 1400 Set Colin up on MW-26
 1500 Gather Bottles, dump 160, set up on MW-29
 1508 $\bar{x}$ Pump start on MW-29
 Took readings every 5 mins on
 every well. See GW Sampling
 Log for all wells
 1600 Sample MW-29
 1645 Joined Wendy + Tamara
 1715 Helped Nick ready coolers
 for samples, separated samples
 and packed coolers. started
 COC.
 1830 Left site.

EOD Victoria Sieglen

3/6/14 Whirlpool 35° Sunny

0650 Arrive on site

700 Safety meeting

715 gather sample bottles
had to IT MW-6 calibrated equipment last night.

734 Pump start
Took readings every 5 mins
see GW Sample log for details
on every well

830 Sample IT MW-6 purge 1.25 gal
pull 1/2 meter decen (will happen
on every well)

850 leave IT MW-6 to pump Dump
purge water.

915 Left site for gas + ice. Delivered
ice to WS + CS.

945 Back on site @ IT MW-4

955 Pump start 45° Sunny N wind 5mph

1040 Sample IT MW-4 purged 1.5 gal

1115 Packed up headed to IT MW-2

1120 Set up on IT MW-2 (50° Sunny, W-SW
wind 7mph)

1133 Pump start

1235 Sample IT MW-2

1250 Sample Dup-1-201403

1320 Packed up dropped cooler in
staging area and separated
samples

3/6/14 Whirlpool

Cont

Picked up another cooler. Getting
ice and seeing if WS + CS need
anything.

1442 Set up on IT MW-28 Sunny

1452 Pump start (57° W wind 7mph)

1554 Sampled IT MW-28
purged 2.0 gal

1625 packed up

1650 Set up on IT MW-21 Sunny
59° 9mph W wind

1659 Pump start

1735 Sample IT MW-21 purged .75 gal

1745 Packed up. go to h. help
Nick bag ice, + pack samples

1855 Left site

Victoria Sidel
3/6/14

317114 Whirlpool { 360° N-NE Partly cloudy
ENE Wind 8mph

- 650 Arrive on site
 700 Calibrate equipment
 715 HS meeting - slips, trips, falls
 730 Gather samples bottles, get organized, discuss today's events
 800 Travel to MW-67 + set up
 815 Pump start
 920 Turned off Pump to allow well to recharge for sampling Purged 1 gal
 950 Sample - MW-67
 1032 Packed up leaving well
 1050 Arrive at MW-66 { 170° E wind 8mph } Partly cloudy
 1059 Pump start
~~1055~~ 1135 Sample MW-66
 1212 Packed up leaving well
 131215 Discussing wells to pump next separating samples
 1315 Arrive @ MW-57 { 63° cloudy }
 1324 Pump start { N wind 5mph }
 1350 Purge Dry Purged less than 0.25 gal. Allowing to recharge then sample.
 1405 Sample MW-57

VS

317114 Whirlpool { 62° ENE wind 5mph } Partly cloudy

- 1415 Packed up equipment + moved to MW-58
 1436 Pump start
 1515 Sample MW-58
 1530 Joined WS + THK to decide next well. Decide I would start reading samples + COC for shipment
 15551540 Back in staging area packing samples
 1745 Run microbial insight samples to Fed Ex
 1810 Back on site, hand over PACE samples to courier
 1900 Left site

Good at 317114
 Victoria 3:14

3/8/14 Whirlpool

- 800 Arrive on site and Calibrate VSI
 835 Head to ITMW-9
 840 Pump Start
 932 Sample ITMW-9 purge ~1.10 gal
 940 Packed up head to ITMW-7
 1005 Pump start (53° Cloudy, NNE wind 5mph)
 1039 Sample ITMW-7
 1050 Packed up, dump H₂O head to ITMW-1
 1100 Set up on ITMW-1 (57° Cloudy, calm)
 1110 Pump start
 1145 Sample ITMW-1
 1152 Packed up (Started springling)
 1200¹¹⁵⁵ Set up on MW-38
 1204¹¹⁵⁵ Pump on MW-38
 1313 Sampled MW-38
 1316 Packed up
 1320 Equipment Blank
 1330 off site to grab another burger
 1340 Discuss w/ WS, NZ, CS what wells are left, as well as Dups, + ms/msp
 1418 Pump start ITMW-15 (Cloudy 61° NNE wind 5mph)
 1457 Sample ITMW-15
 1504 Packed up move to ITMW-9

- 3/8/14 Whirlpool (ST, cloudy, W wind 13mph)
 1514 Pumpstart ITMW-19
 1553 Sample ITMW-19
 1557 Dup-4-20403
 1604 Packed up + Dump water + start on COC.
 1820 Left site

Go to Mike's Singletts
 3/8/14

32 3/19/14

Whirlpool (cloudy 44°)
Calm
pump rate 150 mL/min

730 on site

745 H/S meeting

~~800~~ 830 Arrive at MW-61 for (Cst+US)~~Hydra~~ Bubble stripping. ^{equilibrate} 4 mins, well went dry

918 Well went dry, took air sample

925 Setup on MW-60

bottled empty emptied before
sample taken. Well needed to
recharge940 Rinse bottle w/ DI water (will
do after every well)

1015 Set up on MW-50 pump rate 90 mL/min

1030 injected air

1042 Sampled air, well started

going dry. Watched wells
when they started gettingpumping air. Turned pump off before
air reached sample

1100 pumped started MW-62 90 mL/min

1104 injected air

-Ask lab if field filter

pump rate
~90 mL/minwould change result. Debris
becomes present in bottle +
clogs.

3/19/14 Whirlpool

33

1124

920 Sampled well

1130 Packed up moving to MW-66

1143 Setup on MW-66 90 mL/min

1149 Pump start

1152 Inject air

1212 Sampled MW-66

1215 Pack up, head back to
MW-60

1223 Pump on

1227 Inject air on MW-60 80 mL/min

1233 Sample MW-60 well went
dry. 90 mL/min - rate

1236 Packed up heading to MW-63

1246 Pump start 80 mL/min
90

1248 inject air

1308 Sample MW-63

1310 Pack up head to MW-62

1320 Pump start 100 mL/min

1324 inject air

1344 Sample MW-62

1346 Packed up moving to MW-68

1357 Pump start

Sample MW-68

1408 Inject air

1428 Sample MW-68 20 min run
100 mL/min

31 Oct 319114 Whirlpool

1430 packed up moving to MW-40~~1440~~

1438 Pump start

1446 Injected air

1506 Sample MW-40

100 mL/min
20 min1510 Packed up moving ^{US} to MW-72~~1518~~ 1518 Pump start MW-72100 mL/min
20 min

1522 Inject air

1542 Sample MW-72

1548 Pack up Pump purge
H₂O. met w/ ME + WS to get
another battery + discuss equipm
needs for the week and what WS
is taking back1630 headed to MW-39100 mL/min
20 min run

1642 Pump start

1647 Inject air

1707 Sample MW-39

~~1707~~ 1710 set up on MW-391716 Start pump 1500 mL/min ^{US} 15 min

1731 Sample MW-39 1820 - clean + org

1739 Setup on MW-31 1900 - off site~~1743~~ 1743 inject air17586 Sample MW-31X
Starting getting lots of
bubbles.

1812 meet courier pass off samples

319114 600
Vickie
21

March 3, 2014 Whirlpool

645	Arrive on site
	21° Partly cloudy
650	HS meeting w/ Denova
715	Bring in a separate equip + organize
800	rounded up keys
821	ITMW-9 Σ 20.90 Decon after every well
828	ITMW-5 Σ 17.97
835	ITMW-10 Σ 19.89
	-having difficulty getting PVL caps off wells due to brine condensation.
842	ITMU-6 Σ 22.19
854	ITMW-4 Σ 17.09
904	ITMW-2 Σ 12.78
909	ITMW-3 Σ 13.05
918	ITMW-4 Σ 14.97
921	ITMW-13 Σ 15.39
930	ITMW-12 Σ 14.27
938	ITMW-1 Σ 15.80
945	ITMW-22 Under slight pressure let stabilize for 2 mins + check
947	still fluctuating

V.S.
Rite in the Rain

3/8/14 Whirlpool Fort Smith

40°F
Sunny

0630 ENVIRON (Nick Zumeller) on-site.
Mike Eddings (ENVIRON) already
on-site.

0645 ENVIRON (Wendy Storestreet, Colin
Smalley) on-site. Conduct 1145
meeting & discuss work
for the day.

0700 Calibrate & gather equipment
for GW sampling. ENVIRON (Victoria
Siedler) on-site.

0830 Arrive @ MW-32

0855 Begin purging MW-32. See
sampling log for parameters
& other measurements.

1005 Sample MW-32-20140308
@ 1005

1020 Arrive @ MW-65

1035 Begin purging MW-65. Set sampling
log for parameters & measurements.
Initially very turbid (very dark gray)
Delay connecting to flow cell. *340*

3/8/14 Whirlpool Fort Smith

50°F
Sunny

MW-65
(cont'd)

Sample MW-65-20140308
@ 1135

~~1145~~ ¹¹⁴⁵

Arrive @ MW-34

1210

Begin purging MW-34. See log

Sample MW-34-20140308
@ 1330

1405

Arrive @ ITMW-12

1414

Begin purging ITMW-12. See
sampling log for parameters
& measurements.

Sample ITMW-12-20140308
@ 1520

1535

Arrive @ MW-25

1545

Begin purging MW-25. See
sampling log for parameters
& measurements.

Sample MW-25-20140308
@ 1650

Alfred

Rite in the Rain

3/8/14

Whirlpool Fort Smith

45°F
cloudy

Sample EB-2-20140308

@ 1710

(Equipment Blank)

1815

ENVIRON off-site

3/9/14

Whirlpool Fort Smith

40°F

cloudy

0720

Nick Zurweller (ENVIRON)

on-site. Mike Eddings

(ENVIRON) on-site.

0730

ENVIRON (Wendy Stordreed,
Victoria Sreben, Colin Smalley)
on-site. Discuss H&S plan
& work for the day.

0830

Calibrate VSI (2-point pH &
conductivity). Arrive @calibration
out of
range
for
conductivity

IMW-7 & set tubing

for development. See sampling
log for parameters &
measurements.

0837

Begin purging IMW-7

0841

End purging IMW-7.

Purged ~ 10.1 gal (IMW-12^{vol})

0950

Arrive @ IMW-12 for
development. See sampling log
for parameters & measurements.

1001

Begin purging IMW-12

1102

End purging IMW-12. ~ 9.7 gal
purged (> 4 casing vol) (IMW-12^{vol})
Rain
Back

[illegible]

Project / Client WHIRLPOOL

25°F, Partly Sunny

*0645: ARRIVE ON SITE, ATTEND H&S BRIEFING / PROJECT BRIEFING

0710: DISTRIBUTE EQUIPMENT

0747: MOB TO OFFSITE WELLS TO
TAKE WATER LEVELS - SEE
SEPERATE LOGS.

0911: OFF SITE FOR RESTROOM BREAK.

0928: Met TAMARA H-K FOR KEYS TO OFF-SITE WELLS. THEN RESUMED TAKING H₂O LEVELS.

1022: WHILE GAGING RW-69, APPROACHED BY RESIDENT. ASKED WHAT I WAS DOING & TOOK A PICTURE OF ME.

1128: RETURN TO SITE TO ASSIST WITH
ON-SITE WATER LEVELS

HAVE JUST MADE 2ND VISIT TO
1701 JACOBS - FENCE IS LOCKED
AND 3 DOGS & 1 PIG IN BACK YARD.
OWNER DOES NOT ANSWER DOOR.

1420: SET UP TO SAMPLE AT MW-26.

1616: TOOK SAMPLE MW-26-201403

THIS IS AN "MNA" SAMPLE WHICH INCLUDES BOTTLES AS LISTED ON FOLLOWING PAGE:

4

Location FT SMITH Date 3/5/2014Project / Client WHIRLPOOLQUARTERLY GW SAMPLING.

1616 (cont.)	# bottles	Size	Analysis
	1	1 L	DHC (Microbial Ins.)
	2	40 mL voa	
	2	40 mL voa	
	3	40 mL voa	Chloroform by 8015
	1	250 mL (amber)	TOC by 5310C / Ammonia
	4	250 mL	Sulfide / Metals /
CS +	250 mL		Cl / SO ₄ / Bromide /
CS +	250 mL		Alkalinity / Phosphate
CS +	250 mL		

1630 BACK TO BOILER ROOM TO ORGANIZE, PREP SAMPLES FOR SHIPMENT.

1830 OFF SITE FOR THE DAY.

CS

Location FT SMITH Date 3/6/2014 5Project / Client WHIRLPOOLQUARTERLY GW SAMPLING

35°F, Sunny 30.18 inHg ↑

0645: ARRIVE ONSITE, ATTEND H&S BRIEFING.

0706: START YSI CALIBRATION

0735: MOB OFFSITE TO BEGIN SAMPLING. STOP TO GET GAS.

0800: SET UP ON MW-50.

NOTICED BROKEN PUMP HEAD AND PICKED UP EXTRA PUMP ON-SITE.

WELL RAN DRY - ALLOWED TO RECHARGE.

1030: TOOK SAMPLE MW-50-201403

HAD FULL VOA'S, ALL OTHERS APPROX. 1/2 FULL DUE TO LOW VOLUME.

1100: SET UP ON MW-60.

WELL WENT DRY AFTER ~15 MIN.

1135 SET UP ON MW-61.

WELL WENT DRY AFTER ~20 MIN.

1300 SAMPLED MW-60-201403

FULL VOA'S, PARTIAL 250'S, EMPTY 1 L BOTTLE.

1400 SAMPLED MW-61-201403

FULL VOA'S, ALL OTHER BOTTLES PARTIAL.

CS

6

Location

FT SMITH

Date

3/6/2014

Project / Client

WHIRLPOOL

QUARTERLY GW SAMPLING

1505 SET UP ON MW-31.
 1600 SAMPLE MW-31-201403
 ALL BOTTLES FULL.
 1705 SET UP ON ITMW-10.
 1755 TOOK SAMPLE ITMW-10-201403
 3 VOA's
 1850 LEFT SITE TO GET ICE, DROP
 OFF COOLERS AT FEDEX, MET
 THK/VLS AT FEDEX BUT TOO LATE,
 RETURNED TO HOTEL.

Location

FT SMITH

Date

3/7/2014

Project / Client

WHIRLPOOL

QUARTERLY GW SAMPLING

0650 ARRIVE ONSITE FOR H&S MTC
 CALIBRATED EQUIPMENT.
 0752 DEPART SITE TO SAMPLE
 TWO MNA WELLS IN THE
 NEIGHBORHOOD.
 0800: SET UP ON MW-63
 0907: MW-63 PURGED DRY. WILL ALLOW
 TO RECHARGE.
 0948: SET UP ON MW-62.
 1115: SAMPLE MW-62-201403
 ALL MNA BOTTLES FULL.
 1210: OFF WORK SITE FOR RESTROOM
 BREAK AND LUNCH.
 1250: SET UP AT MW-63 FOR SAMPLING.
 ALMOST 4 HR. RECHARGE.
 1300: TOOK SAMPLE MW-63-201403
 FILLED ALL MNA BOTTLES.
 1415: MOB TO MW-55.
 1423: APPROACHED BY RESIDENT AT 1505
 JACOBS AVE. AND TOLD TO LEAVE HER
 PROPERTY. WHEN NOTIFIED OF THE
 ACCESS AGREEMENT, SHE SAID THERE
 IS NOT ANY AGREEMENT ANY MORE.
 I LEFT THE PROPERTY + NOTIFIED THK.

CS

8

Location Ft SMITH Date 3/7/2014Project / Client WHIRLPOOL
QUARTERLY GW SAMPLING

65°F PARTLY CLOUDY

1450 SETTING UP ON MW-71.

1600 TOOK SAMPLE MW-71-201403
3x VOA For VOC's

1620 MOB TO RW-69

START PURGE, RECORD PARAMETERS

1700 TOOK SAMPLE RW-69-201403

STD NON-MNA BOTTLES (3x VOA For VOC)

1735 MOB TO MW-41.

START PURGE, TAKE READINGS.

1816 TOOK SAMPLE MW-41-2014031830 MOB BACK TO BOILER ROOM FOR
END-OF-DAY TASKS - PLUG IN BATTERIES,
STORE SAMPLES.

1900 OFF-SITE FOR THE DAY.

Location

Ft SMITH

Date

3/8/2014 9

Project / Client

WHIRLPOOL

QUARTERLY GW SAMPLING

40°F Sunny

0650 ARRIVE ONSITE, CALIBRATE YSI.

0800 MOB TO ~~MW-76~~ IW-76.

START PURGING, REC'D PARAMETERS.

0915 TOOK SAMPLE IW-76-201403

0930 MOB TO IW-77.

START PURGING, REC'D PARAMETERS.

1050 TOOK SAMPLE IW-77-2014031100 ^{TO BOILER ROOM} ~~OFFSITE~~ FOR RESTROOM BREAK

1145 MOB TO ITMW-13

1155 START PURGING, REC'D PARAMETERS

1240 TOOK SAMPLE ITMW-13-201403

1250 MOVE OVER TO ITMW-14

1345 TOOK SAMPLES ITMW-14-201403MS/MSD 2

1400 MOVE TO ITMW-18,

START PURGING/REC'D PARAMETERS

1500 TOOK SAMPLES ITMW-18-201403DUP-5-2014031526 TOOK SAMPLE EB-4-2014031540 BACK TO BOILER ROOM TO
PREP SAMPLES FOR SHIPPING.

1620 OFF SITE FOR DAY.

10

Location FT SMITH Date 3/9/2014Project / Client WHIRLPOOLQUARTERLY GW SAMPLING

0730 ARRIVED ONSITE, H&S MTG.
WILL BE WORKING WITH
V. SIGGLEN TODAY - SEE HER
LOG FOR DETAIL.

1830 OFFSITE FOR THE DAY.

Location FT SMITH Date 3/10/2014 11Project / Client WHIRLPOOL

0800 ARRIVED ONSITE & ATTENDED
H&S MEETING.

0830 CALIBRATE YSI & DECON
FLOW-THRU CELL
MOB TO IMW-8 TO BEGIN
DEVELOPMENT.

BEGIN PURGE, REC'D PARAMETERS

- FLOW-THRU CELL LEAKING, TRIMMED
GASKET & TIGHTENED CLASP.
- PURGING 4 WELL VOLUMES:
 $4 \times 15 \text{ ft} \times 0.167 \text{ gal/ft} = 10.02 \text{ gal}$

RETURNED TO BOILER ROOM

- UNPACKED TROLL PROBES
- SCANNED GW LOGS FROM SAMPLING
EVENT

1720: LEFT SITE FOR THE DAY

- 0645 ARRIVE ON-SITE.
H+S BRIEFING.
- 0715 CALIBRATE YSI:
3-POINT PH 4/7/10
SP. COND.
- 0820 SET UP ON IMW-16.
START PURGE, RECORD PARAMETERS.
- 0915 TAKE SAMPLE IMW-16
- 0930 SET UP ON IMW-15.
START PURGE, RECORD PARAMETERS.
- 1025 - TAKE SAMPLE IMW-15.
- 1050 - SET UP ON IMW-19.
START PURGE, RECORD PARAMETERS.
- 1150 - TAKE SAMPLE IMW-19.
- 1201 - REMOVE TROLL S/N 51376 FROM
IMW-3. FIRST EXTRACTED TEST
DATA, THEN STOPPED TEST.
DEVICE OUT OF BATTERY.
- 1215 CHECKED OTHER TROLLS - BATTERY
OKAY. EXTRACTED IMW-9 + IMW-11
TEST DATA.
- 1245 MS ARRIVES ONSITE, TO ASSIST
WITH SAMPLING.
- 1257 SET UP ON IMW-18.
START PURGE, RECORD PARAMETERS

- 1315
1350 BEGIN CALIBRATION OF TROLL
S/N 51376. QUIK-CAL FOR
PH, ORP, SP. COND. 2-POINT
D.O. CALIBRATION.
- 1350 TAKE SAMPLE IMW-18
- 1400 HEALTH + SAFETY MTG. WITH
ISOTEC.
- 1515 DEPLOY TROLL S/N 51376 IN
IMW-7. SET PRESSURE SETTINGS
TO MATCH DEPTH (FT BTOC.)
- 1548 SET UP ON IMW-24
- 1600 - START PURGE, RECORD PARAMETERS
- 1650 - TAKE SAMPLE IMW-24
- 1705 - SET UP ON IMW-23.
START PURGE, RECORD PARAMETERS.
- 1800 - TAKE SAMPLE IMW-23
→ INCLUDES A 250mL BOTTLE
FOR METALS ANALYSIS.
- 1815 - HELP CLOSE UP WELLS IN ARRAY
#1.
- 1915 - OFF-SITE FOR THE DAY.

0707	ARRIVE ONSITE, H4S BRIEFING.		
0745	MOB OFFSITE TO GAUGE MONITORING WELL NETWORK.		
TIME	WELL	SWL	COMMENTS
0810	MW-67	4.23	good condition.
0820	MW-66	5.34	good condition
0830	MW-61	8.69	missing hex bolt. (1) J-Plug too tall for well cover.
0840	MW-60	7.80	missing 1 hex bolt. J-Plug too tall.
0850	MW-50	7.92	J-Plug too tall. East side is stripped. Vault full of water.
0910	MW-63	5.96	Good condition.
0920	MW-62	6.72	Good Condition.
0950	MW-71	8.80	Good Condition.
0955	MW-70	9.01	Good Condition.
1005	RW-69	8.75	Good Condition.
1010	MW-68	7.32	J-Plug gasket misshapen
1030	OFFSITE TO GET SOCKET FOR WELLS w/ LARGE BOLTS.		
1116	MW-75	9.70	GOOD CONDITION. VAULT FULL OF WATER.

CS

TIME	WELL	SWL	COMMENTS
1125	MW-40	10.80	VAULT STRIPPED ON BOTH BOLTS.
1138	MW-72	9.33	VAULT COMPLETELY FULL OF WATER. ~6" OVER FILL
1147	MW-74	9.62	VAULT FULL OF WATER TO TOP OF CASING. NO GASKET.
1156	MW-76	9.89	VAULT FULL OF WATER TO TOP OF CASING. NO GASKET.
1206	MW-77	10.47	VAULT FULL OF WATER TO TOP OF CASING. NO GASKET. NORTH SIDE OF VAULT STRIPPED.
1213	MW-80	10.86	LID BROKEN.
1225	BACK ONSITE FOR LUNCH		
1347	MW-46R	3.58	ONE (NORTH) BOLT EYE BROKEN ON VAULT.
1410	JW-73	8.87	VAULT FULL OF WATER TO TOP OF VAULT. NO GASKET.
1422	MW-41	9.46	VAULT FULL OF WATER TO TOP OF VAULT. BOTH BOLT EYES STRIPPED/BROKEN. NO GASKET.

CS

38

Location

FT SMITH

Date

3/25/2014

Project / Client

WHIRLPOOL

TIME	WELL	SWL	COMMENTS
1430	MW-36	10.55	Good condition.
1440	MW-39	12.84	Good condition
1447	IW-78	10.84	Cracked well pad.
1501	MW-65	11.28	Good condition
1523	MW-57	5.25	Good Condition.
1531	MW-56	6.73	Good Condition.
1600	TO BOILER ROOM TO HELP ORGANIZE PAPERWORK.		
1730	ASSISTING WITH SAMPLING AT ARRAY #1 - SEE WW/MS LOGS FOR DETAIL.		
1823	OFF SITE FOR THE DAY.		

Location

FT SMITH

Date

3/26/2014

39

Project / Client

WHIRLPOOL

0700 ARRIVED ON SITE, H&S BRIEFING.

0730 PULLED TROLL UNITS FROM IMW-9, IMW-11, IMW-7. DECONTAMINATED EACH UNIT.

0830 PLACED TROLLS IN IMW-14, IMW-16, IMW-18. CALIBRATED TRANSDUCER AND SYSTEM CLOCK IN EACH. PROGRAMMED TESTS IN EACH TO COLLECT DATA FROM ALL SENSORS EVERY 15 MIN.

0925 ASSISTING WITH SAMPLING IN ARRAY #1.

1100 TO BOILER ROOM TO MAKE UP BOTTLE KITS FOR WELLS.

1134 SET UP ON MW-65. START PURGE, RECORD PARAMETERS.

1220 TAKE SAMPLE MW-65-201403 UNLESS NOTED, SAMPLES FROM THIS EFFORT INCLUDE:

- 3x 40mL VOA - CHLOROETHANOL BY 8015
- 1x 250mL (Amber) - TOC BY S310C / AMMONIA
- 4x 250mL (Plastic) - SULFIDE / METALS / Cl / SO₄
- ↳ ALKALINITY / BROMIDE / PHOSPHATE
- 4x 40 mL VOA
- 1x 1000 mL Plastic-DHC

Location FT SMITHDate 3/26/2014Project / Client WHIRLPOOL

- 1300 OFF-SITE TO GET LUNCH.
 1330 RETURN TO BOILER ROOM TO DO A BOTTLE INVENTORY. ALL APPEAR TO BE AS REQUESTED.
 1440 SET UP ON IW-80.
 START PURGE, RECORD PARAMETERS.
 1540 TAKE SAMPLES IW-80-201403
MS/MSD-2
 1620 HEAD BACK TO BOILER ROOM TO PREP SAMPLES FOR SHIPPING. ALSO, GENERAL ORGANIZING/HOUSEKEEPING IN SAMPLE WORKBENCH AREA.
 1830 OFF SITE FOR THE DAY.

CS

Location FT SMITHDate 3/27/2014Project / Client WHIRLPOOL

- 0645 - ARRIVE ONSITE, H&S MEETING.
 0730 - CALIBRATE YSI: SP. COND. AND 3-POINT pH (7/4/10)
 0810 - MOB OFF-SITE FOR SAMPLING.
 0837 - SET UP ON IW-76.
 START PURGE, RECORD PARAMETERS.
 WATER IS PINK.
 0940 - TAKE SAMPLE IW-76-201403
 1116 - SET UP ON MW-41. JOINED BY M.S. TO INTRODUCE HIM TO OUR SAMPLING PROGRAM.
 START PURGE + RECORD PARAMETERS.
 1215 - TAKE SAMPLE MW-41-201403
 1250 - BACK TO BOILER ROOM FOR LUNCH BREAK. ALSO PICKED UP MORE SAMPLE BOTTLES.
 1346 - SET UP ON MW-56.
 START PURGE, RECORD PARAMETERS.
 1404 WELL WENT DRY. WILL ALLOW ~~1404~~¹⁴⁰⁵ TO RECHARGE BEFORE SAMPLING.
 1420 - SET UP ON MW-57.
 START PURGE, RECORD PARAMETERS.
 1434 - WELL WENT DRY. WILL ALLOW TO RECHARGE BEFORE SAMPLING.

CS

42

Location

FT SMITH

Date

3/27/2014

Project / Client

WHIRLPOOL

1453 - SET UP ON MW-46R.

START PURGE, RECORD PARAMETERS.

1605 - TAKE SAMPLE MW-46R-201403

1639 - SET UP ON WELL IN-73

START PURGE, TAKE PARAMETERS.

1715 - CS TO ARRAY #1 TO SEE ABOUT

USING BAILERS ON MW-56/57. W. WEBER

AND T. GLEASON APPROVED. CS OBTAINS

BAILERS AND PROCEEDS TO MW-56.

1745 - APPROACHED BY HOMEOWNER AT MW-56.

RESIDENT STATES SHE DID NOT

RECEIVE A LETTER NOTIFYING HER

OF THE SAMPLING.

1750 - TAKE SAMPLE MW-56-201403

→ VOA'S FULL

→ 250mL'S PARTIAL

→ 1 L NOT FILLED.

1800 - MS TAKES SAMPLE IN-73-2014031830 - CS TAKES SAMPLE MW-57-201403

→ VOA'S FULL

→ 250mL'S PARTIAL

→ 1 L NOT FILLED.

→ BAILER INSUFFICIENT TO COLLECT ALL, USED PUMP.

1915 CS+MS RETURN TO BOILER ROOM

1945 OFF SITE FOR THE DAY.

Location

FT SMITH

Date

3/28/2014 43

Project / Client

WHIRLPOOL

0710 - ARRIVE ON SITE, H+S BRIEFING.

0730 - MS/CS BEGIN CALIBRATION OF ALL 3 YSI'S INCL. SP. COND., 3-POINT pH (7/4/10), AND DO. ALSO CLEANED/ORGANIZED THE WORK AREA IN THE BOILER ROOM.

0910 - SET UP ON ~~W-74~~^IW-74.

0912 - START PURGE, RECORD PARAMETERS.

1015 - TAKE SAMPLE IW-74-201403

1110 - CS TO BOILER ROOM TO PICK UP WACK AMPULES.

1127 - SET UP ON WELL MW-71.

START PURGE, RECORD PARAMETERS.

1230 - TAKE SAMPLE MW-71-201403

1300 - OFF SITE FOR LUNCH.

1345 - BACK ON-SITE.

1411 - SET UP ON WELL ITMW-1.

START PURGE, RECORD PARAMETERS.

1500 - TAKE SAMPLE ITMW-1-201403

1545 - SET UP ON ITMW-21.

START PURGE, RECORD PARAMETERS.

1645 - TAKE SAMPLE ITMW-21-201403

1730 - START FILLING BUBBLE STRIP. BOTTLE @ ITMW-21

1747 - START EQUILIBRATION - PURGE @ 150mL/min

44

Location

FT SMITH

Date

3/28/2014

Project / Client

WHIRLPOOL

- 1812 - TAKE DISS. H SAMPLE ITMW-21-201403
 1820 - BACK TO BOILER ROOM FOR
 END OF DAY HOUSEKEEPING.
 1850 - OFF SITE FOR THE DAY.

CS

Location

FT SMITH

Date

3/29/2014

45

Project / Client

WHIRLPOOL

- 0630 - ARRIVE ONSITE. TRANSFER DATA TO LAPTOP.
 0710 - H&S MEETING. THEN ORGANIZING
 DISS. H KITS.
 0800 - MOB TO NEIGHBORHOOD.
 0813 - START DISS. H EQUILIBRATION AT MW-71.
 FLOW RATE = 150 mL/min
 → NEEDS 25 min.
 0845 - TOOK DISS. H SAMPLE MW-71-201403
 → 32 min @ 150 mL/min
 0856 - START DISS. H EQUILIBRATION AT RW-69.
 FLOW RATE = 150 mL/min (25 min)
 0926 - TAKE DISS. H SAMPLE RW-69-201403
 → 30 min @ 150 mL/min
 1010 - START DISS. H EQUILIBRATION AT IW-74.
 FLOW RATE = 150 mL/min (25 min)
 1040 - TAKE DISS. H SAMPLE IW-74-201403
 → 30 min @ 150 mL/min
 1059 - START EQUILIBRATION FOR DISS. H AT IW-73
 FLOW RATE = 150 mL/min (25 min)
 1129 - TAKE DISS. H SAMPLE IW-73-201403
 → 30 min @ 150 mL/min
 1150 - START EQUILIBRATION AT MW-41
 FLOW RATE = 200 mL/min (20 min)
 1215 - TAKE DISS. H SAMPLE MW-41-201403

CS

46

Location

FT SMITH

Date

3/29/2014

Project / Client

WHIRLPOOL

- 1240 OFF SITE FOR LUNCH AND RUN TO HARDWARE STORE.
- 1418 START DISS. H EQUILIBRATION AT IW-76
FLOW RATE = 225 mL/min (15 min)
- 1433 TAKE DISS. H SAMPLE IW-76-201403
15 min @ 225 mL/min
- 1451 START DISS. H EQUILIBRATION AT IW-77
FLOW RATE = 300 mL/min (10 min)
- 1501 TAKE DISS. H SAMPLE IW-77-201403
→ 10 min @ 300 mL/min
- ~~1517~~ 1517 START DISS. H EQUILIBRATION AT IW-80.
FLOW RATE = 300 mL/min (10 min)
- 1527 TAKE DISS. H SAMPLE IW-80-201403
→ 10 min @ 300 mL/min
- 1550 START DISS. H EQUILIBRATION AT MW-34
FLOW RATE = 300 mL/min (10 min)
- 1600 TAKE SAMPLE (DISS. H) MW-34-201403
- 1626 START DISS. H EQUILIBRATION AT MW-46R
FLOW RATE = 300 mL/min (10 min)
- 1636 TAKE DISS. H SAMPLE MW-46R-201403
→ 10 min @ 300 mL/min
- 1732 START DISS. H EQUILIBRATION AT MW-32.
FLOW RATE = 300 mL/min.
- 1742 TAKE DISS. H SAMPLE MW-32-201403
→ 10 min @ 300 mL/min

Location

FT SMITH

Date

3/29/2014

47

Project / Client

WHIRLPOOL

- 1755 - START DISS. H EQUILIBRATION AT MW-33.
FLOW RATE = 300 mL/min (10 min)
- 1805 - TAKE DISS. H ^{SAMPLE CS} MW-33-201403
→ 10 min @ 300 mL/min
- 1845 - OFF SITE FOR THE DAY.

CS

- 0700 ON SITE, H&S MEETING.
- 0730 MS PERFORMS CALIBRATION OF
YSI: 3-POINT pH (7/4/10), SP. COND.,
AND D.O.
- CS/VS ORGANIZE AND INVENTORY
SPARE BOTTLES.
- 0825 SET UP ON ITMW-10 FOR SAMPLING
AS DESCRIBED IN THIS LOG ON 3/26/2014.
BEGIN PURGE, RECORD PARAMETERS.
- 0940 TAKE SAMPLE ITMW-10-201403
- 1035 SET UP ON WELL ITMW-11.
START PURGE, RECORD PARAMETERS.
- 1150 TAKE SAMPLE ITMW-11-201403
- 1250 SET UP ON WELL ITMW-17, 2^{CS}
START PURGE, RECORD PARAMETERS.
- 1400 TAKE SAMPLE ITMW-17-201403
- 1430 BACK TO BOILER ROOM TO PACK
SAMPLES AND EQUIPMENT
- 1750 OFF SITE FOR THE DAY.

CS

- 0700 ON SITE, H&S MEETING
- 0730 BEGIN OPENING WELLS FOR
POST-INJECTION MONITORING.
- 0830 LOAD EQUIPMENT INTO MY
VEHICLE FOR RETURN TO F.E.I.
- 0945 REPLACE ALLEN-HEAD BOLTS ON
MW-60 & MW-61 THAT WERE
MISSING.
- 0955 BACK TO BOILER ROOM WAITING
FOR INSTRUCTIONS.
- 1141 START DISS. H EQUILIBRATION ON
MW-4³⁵_{SR}. FLOW RATE = 300 mL/min (10 min.)
- 1151 TAKE DISS. H SAMPLE MW-3SR-201403
10 min @ 300 mL/min
- 1200 START DISS. H EQUILIBRATION
ON MW-6S. FLOW RATE = 300 mL/min (10 min.)
- 1210 TAKE DISS. H SAMPLE MW-6S-201403
10 min @ 300 mL/min
- 1300 OFF SITE FOR THE DAY.
DRIVING BACK TO OVERLAND
PARK.

CS