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JEFFREY NOEL
CORPORATE VICE PRESIDENT
COMMUNICATIONS AND PUBLIC AFFAIRS

Monday, November 17, 2014

Ray Gosack
City Administrator, City of Fort Smith, Arkansas
623 Garrison Ave
3rd Floor, Room 315
Fort Smith, AR 72901

Via Electronic Mail

RE: WHIRLPOOL THIRD QUARTER 2014 PROGRESS REPORT

Dear Mr. Gosack,

I am writing to inform you that Whirlpool Corporation submitted the quarterly progress report for the 3rd Quarter of 2014 to ADEQ last Friday, November 14, 2014, as required by the Remedial Action Decision Document (RADD) dated December 27, 2013. This report is a description and review of previously collected scientific data that was validated and summarized during the 3rd Quarter of 2014. The complete report and all appendices and attachments are available at WhirlpoolFortSmith.com, and I have attached the main report to this letter.

In summary:

- Monitoring to determine the impact of earlier ISCO injection events measured decreases in TCE concentrations in the targeted injection areas by as much as 80% in all but two areas. Natural attenuation of TCE is also occurring in both onsite and offsite groundwater. The success of the second oxidant injection effort is anticipated to be further evident after receipt and assessment of the 4th Quarter groundwater monitoring data.
- The approximate location of the hydraulic divide between the north and south groundwater plumes was determined to be on the Whirlpool site south of Ingersoll Avenue. Data from both the south plume beneath the Whirlpool property and the north plume extending past Ingersoll Avenue indicate that both plumes were stable to decreasing, though the expected seasonal variability of plume boundaries was evident at select locations.
- To supplement the tools for measuring the impact of our remediation efforts, an analysis of the third quarter groundwater data was conducted to provide an estimate of the amount of TCE in the groundwater. This analysis determined that the total quantity of TCE distributed throughout the north groundwater plume is between less than 1 gallon and a maximum of 2 gallons, and between 2 gallons and a maximum of 8 gallons are present in the south plume beneath the Whirlpool

property. These conservative estimates provide further confirmation that TCE in the groundwater is limited and contained.

- A voluntary supplemental investigation of the Whirlpool property boundary confirmed that no TCE impacts are migrating beyond the property boundaries, except at the locations previously investigated at the northwest and northeast corners of the former manufacturing building property.
- Risk estimates for potential vapor intrusion from offsite groundwater continue to be below ADEQ's risk management limits. There continues to be no known TCE impacts to offsite soils, surface water or sediment, and health exposure risks remain unchanged.

Whirlpool Corporation is working closely with ADEQ to effectively address the current on and offsite conditions. We will continue to employ the Adaptive Remedy approach to ensure we are effectively addressing the latest onsite conditions, use the best scientific data to validate that there are no exposure pathways or health concerns to Fort Smith residents, and remain committed to conducting remediation activities where warranted.

Please feel free to contact me if you have any questions as to the details of this report. Updates and background information will be posted on WhirlpoolFortSmith.com as they become available.

Sincerely,

Jeff Noel, VP, Whirlpool Corporation

Third Quarter 2014 Progress Report – Volume 1
July 1, 2014 through September 30, 2014
Whirlpool - Fort Smith, Arkansas

1. INTRODUCTION

This quarterly report has been prepared in accordance with the Remedial Action Decision Document (RADD) dated December 27, 2013, for the Whirlpool Fort Smith, Arkansas, site (Site). This Third Quarter Progress Report (Report) is not forward looking, but is instead a description of past activities and a review of previously collected data that has been validated and summarized for this report. This report includes a description of the work completed during the Third Quarter of 2014, findings of the activities in this reporting period, issues identified and resolved, and deviations or schedule adjustments from plans and correspondence submitted to the Arkansas Department of Environmental Quality (ADEQ). Details regarding the discussion of Summary of Findings are provided in the documents attached to this Report.

2. SUMMARY OF FINDINGS

- Monitoring to assess the impact of the prior ISCO injection events measured decreases in TCE concentrations in the targeted injection areas by as much as 80% in all but two areas. The success of the second oxidant injection effort is anticipated to be further evident after receipt and assessment of the fourth quarter groundwater monitoring data.
- Natural attenuation of TCE is occurring via biological mechanisms or other natural attenuation mechanisms in both onsite and offsite groundwater.
- The approximate location of the hydraulic divide between the north and south groundwater plume boundaries was determined to be south of Ingersoll Avenue, which is generally consistent with previous reporting periods and historic results.
- The south groundwater plume beneath the Whirlpool property and the north plume extending north beyond Ingersoll Avenue both exhibit general characteristics of stable to decreasing plumes based upon statistical analysis of temporal concentration trends; although, variability of the plume boundary is evident at a few locations and a few select wells exhibited increasing concentrations.
- Groundwater impacts to the northeast of the site were identified and delineated (permanent offsite groundwater monitoring wells were installed during the fourth quarter).
- Based on third quarter groundwater data, the maximum estimated total quantity of TCE distributed throughout the north groundwater plume is 2 gallons, and the maximum estimated total quantity of TCE distributed throughout the south groundwater plume is 8 gallons.
- A voluntary supplemental investigation of the property boundary of the Whirlpool property confirmed that no TCE impacts are migrating beyond the property boundaries, except at the locations previously investigated at the northwest and northeast corners of the former manufacturing building property.
- Risk estimates based upon groundwater and soil vapor data for potential vapor intrusion from offsite groundwater continue to be below ADEQ's risk management limits.
- There continues to be no known TCE impacts to offsite soils, surface water or sediment.

- The Site human health exposure risks remain unchanged.

3. REVIEW OF ACTIVITIES COMPLETED – THIRD QUARTER 2014

During the Third Quarter of 2014, groundwater samples were collected via low flow sampling methodologies. Groundwater samples were collected from 55 wells during the week of July 28, 2014. The samples were analyzed for the parameters as outlined in the RADD. The Third Quarter 2014 Groundwater Monitoring Report is included as Attachment A.

Key observations based on the groundwater monitoring data include the following:

- The groundwater potentiometric surface observed during the third quarter event is consistent with that historically observed at the Site.
- The direction of the lateral hydraulic gradient continues to be influenced by a hydraulic divide located just south of Ingersoll Avenue with the hydraulic gradient predominantly in the following directions:
    - Hydraulic gradient north of the divide is in a northeasterly direction; and
    - Hydraulic gradient south of the divide is in a southern/southeastern direction.
- Third Quarter event groundwater monitoring data shows generally stable to decreasing trends for TCE concentrations.
- Third Quarter event groundwater monitoring data in conjunction with historical data demonstrate that natural attenuation of TCE is occurring via biological mechanisms in both onsite and offsite groundwater.

During the Third Quarter of 2014, soil vapor sampling events were attempted in July and September 2014. Soil vapor samples could not be collected during the monitoring event in July. Water was visible in the vapor sampling train from the shallow and deep ports at locations VP-1 and VP-2. Water samples were collected from the shallow and deep ports of VP-2 on July 29, 2014. Water samples could not be collected from either the shallow or deep ports at VP-1 due to the inability to draw a vapor or water sample due to high sustained vacuum. A second soil vapor monitoring event was conducted in September 2014 to confirm the July 2014 results. Soil vapor sampling locations VP-1 and VP-2 remained filled with water that could not be purged. Water samples were successfully collected at the shallow port of VP-1 (VP-1S) and at the shallow and deep ports of VP-2. Sufficient water volume could not be collected from the deep port of VP-1 (VP-1D) due to sustained vacuum on the line. However, sufficient water volume was able to be collected from the older deep port (SV-04D) located adjacent to VP-1D. The Third Quarter 2014 Soil Vapor Monitoring/Vapor Intrusion Report is included as Attachment B.

Key observations based on the soil vapor monitoring data include the following:

- Risk estimates for potential vapor intrusion from offsite groundwater into offsite residences are below ADEQ's risk management limits of 10^{-5} and 1 for cumulative cancer risk and non-cancer hazards, respectively; and

- Using TCE concentrations in water collected from groundwater monitoring wells indicate that the groundwater vapor intrusion model over-predicts potential vapor intrusion risks by at least a factor of approximately 50 relative to vapor intrusion modeling using TCE concentrations detected in shallow water collected from soil vapor monitoring ports.

During the Third Quarter of 2014, monitoring of the second 2014 oxidant injection event occurred at the Whirlpool site. The second 2014 oxidant injection event occurred during the weeks of May 27 and June 4, 2014 (i.e. late in the second quarter of 2014). During this event 22,200 gallons of base activated sodium persulfate (BASP) and 3,000 gallons of Modified Fenton's reagent (hydrogen peroxide and chelated iron) activated sodium persulfate (MASP) were injected into 21 existing injection wells and 40 temporary direct push injection points located in Area 1, Area 2, Area 3 and the supplemental neck area. Attachment C contains the Second Oxidant Injection Summary Report.

Key observations based on the in-situ chemical oxidation (ISCO) performance monitoring data include the following:

- Water levels, field water quality parameters, and persulfate concentrations indicate that the influence of the oxidant was measured in wells located in the injection areas and up to 35 feet from the injection areas (MW-24).
- Measurable levels of persulfate have persisted in portions of the injection areas and in wells down-gradient of the injection areas for more than 90 days following the second injection event (more than 170 days following the initial injection event in Area 1/ Injection Array 3). Conditions remain optimum for continued oxidation of TCE based upon the continued presence of persulfate, although injection of additional caustic or Fenton's reagent may be necessary to re-activate the persulfate.
- The total TCE concentrations in the majority of wells located in the supplemental neck area (Injection Array 1) have decreased approximately 60%.
- The total TCE concentrations in the majority of wells located in Area 2 and Area 3 (Injection Array 2) have decreased approximately 20%.
- The total TCE concentrations in groundwater at MW-86 decreased approximately 70% and total TCE concentrations decreased in the MW-25 injection area (MW-25, MW-85 and MW-86) by approximately 60%.
- TCE concentrations in groundwater at MW-25 and MW-85 increased following oxidant injection and these increases are expected to be the result of desorption of TCE following MASP injection and/or seasonal fluctuations observed at MW-25 (MASP was assessed during the bench scale testing for this project and demonstrated an increased ability to treat adsorbed phase TCE).
- Total TCE concentrations at Injection Array 3 wells located in Area 1 decreased approximately 80%.

The success of the second oxidant injection effort is anticipated to be further evident after receipt and assessment of the fourth quarter groundwater monitoring data (i.e. groundwater monitoring event performed in October 2014).

Whirlpool Facility Property Boundary

Supplemental investigation of the property boundaries was voluntarily completed by ENVIRON for Whirlpool Corporation under the Adaptive Remedy Process (currently underway at the Site to meet the requirements of the RADD) to assess the potential migration of TCE impact in soil or groundwater beyond the Whirlpool facility property boundaries at select locations where previous investigation has not been performed and hydrogeologic conditions suggest confirmation data should be collected. The *Whirlpool Facility Property Boundary Report* is included as Attachment D.

Key Observations

- No TCE impact to soil or groundwater was identified along the east, south or west Whirlpool facility property boundaries;
- No TCE impact to surface water and sediments was identified (ENVIRON/Whirlpool letter report Surface Water and Sediment Sampling near Whirlpool Facility dated September 18, 2014);
- At the north central property boundary, no additional TCE impacts to soil or groundwater were identified above RALs other than areas already previously delineated; and
- The TCE impact at the northwest corner of the former manufacturing building is fully delineated.

4. QUANTITY OF TCE

Estimated average minimum and maximum quantities of TCE in groundwater were calculated for the Site using the results of the Third Quarter groundwater monitoring event. The total quantity of TCE distributed throughout the north and south groundwater plumes is calculated based upon the consistent groundwater divide north of the Whirlpool manufacturing facility and south of Ingersoll Avenue. The quantity of TCE calculations are based on separating the northern and southern plumes at the hydraulic divide at the location of MW-24 (see Figure 2, Attachment A – Third Quarter 2014 Groundwater Monitoring Report).

The estimated range for the quantity of TCE in the northern plume is based upon:

- Plume area of 483,600 square feet (ft^2) consisting of 294,700 ft^2 for the portion of the plume with TCE concentrations ranging from 5 micrograms per liter (µg/L) to 100 µg/L, 188,700 ft^2 for the portion of the plume with TCE concentrations ranging from 100 µg/L to 1,000 µg/L, and 200 ft^2 for the portion of the plume with TCE concentrations greater than 1,000 µg/L;
- Average saturated thickness of 3.7 feet (see Attachment E, Table 1);
- Total porosity of 0.4; and

- TCE specific gravity of 1.465.

The estimated range for the quantity of TCE in the southern plume is based upon:

- Plume area of 823,200 ft^2 consisting of 430,200 ft^2 for the portion of the plume with TCE concentrations ranging from 5 µg/L to 100 µg/L, 302,200 ft^2 for the portion of the plume with TCE concentrations ranging from 100 µg/L to 1,000 µg/L and 90,800 ft^2 for the portion of the plume with TCE concentrations greater than 1,000 µg/L;
- Average saturated thickness of 8 feet (see Attachment E, Table 1);
- Total porosity of 0.4; and
- TCE specific gravity of 1.465.

The estimated quantities of TCE included calculation of the volume of groundwater based upon the distinct areas within the north and south plumes (i.e. area of plume within the iso-concentration lines on Figure 2), average saturated thickness and total porosity (i.e. area x average saturated thickness x porosity = volume of water). The volume of water and minimum and maximum TCE concentrations based upon the plume boundaries were used to calculate the mass of TCE within each section of the plume. The volume of TCE was then determined based upon the specific gravity of TCE. Calculations are identified on Attachment E, Table 2.

Based on a 483,600 ft^2 northern plume and an 823,200 ft^2 southern plume, the following ranges of the quantities of TCE distributed throughout the respective plumes were calculated:

Plume Location	Estimated Minimum Volume	Estimated Maximum Volume
Northern Plume	Less than 1 gallon	2 gallons
Southern Plume	2 gallons	8 gallons

Therefore the total (North + South Plumes) average minimum and maximum quantities of TCE in groundwater associated with the site is 3 to 10 gallons of TCE.

These estimated quantities illustrate the limited volume of TCE present in groundwater. The estimated quantities of TCE present in soil at the Site will be presented in the 2014 Annual Report.

5. DATA AVAILABLE IN THIS QUARTER

Analytical data for the 55 wells sampled, including water levels from this sampling event, is included in the Third Quarter 2014 Groundwater Monitoring Report included as Attachment A.

Analytical data for the soil vapor monitoring is included in the Third Quarter 2014 Soil Vapor Monitoring/Vapor Intrusion Report included as Attachment B.

The Second Oxidant Injection Summary Report, with associated field and performance monitoring data, is included as Attachment C. Continuing ISCO performance data will be provided to ADEQ in subsequent reports.

The Property Boundary Report for the Whirlpool Site with associated field and analytical data, is included as Attachment D.

6. ISSUES ENCOUNTERED AND RESOLUTION

The RADD identified five locations where soil vapor monitoring should be performed to confirm the conclusions regarding the potential for significant vapor intrusion at on and offsite areas. These locations included those installed in 2012. However, as stated in previous quarterly progress reports and other correspondence with ADEQ many of these points have become filled with water. An Addendum to the Soil Vapor Monitoring Program was submitted to ADEQ on October 2, 2014 (during the fourth quarter). ENVIRON/Whirlpool are in the process of addressing ADEQ's October 13, 2014, comments regarding the Addendum to the Soil Vapor Monitoring Program.

During implementation of the adaptive remedy, TCE impacts to groundwater where identified at the northeast corner of the site during the Third Quarter 2014. Work plans were prepared, implemented and initial delineation was completed during the third quarter, although permanent offsite groundwater monitoring wells beyond the northeast corner of the site were not installed until October 2014 to facilitate groundwater monitoring.

Impacts to the northeast corner and a request from ADEQ caused sampling of surface water and sediment at the Site to be investigated. No TCE was detected in surface water or sediments sampled.

7. SCHEDULE

There are no schedule deviations to report in the Third Quarter 2014. Pre-design data collection activities were started before the issuance of the final RADD and remedial activities continue to move forward at an aggressive pace.

LIST OF ATTACHMENTS

Volume 1

Attachment A: Third Quarter 2014 Groundwater Monitoring Report
Attachment B: Third Quarter 2014 Soil Vapor Monitoring/Vapor Intrusion Report
Attachment C: Second Oxidant Injection Summary Report

Volume 2

Attachment D: Property Boundary Report
Attachment E: Quantity of TCE Tables 1 and 2