

STATE OF ARKANSAS
DEPARTMENT OF ENVIRONMENTAL QUALITY



REMEDIAL ACTION DECISION DOCUMENT (RADD)
FOR CORRECTIVE ACTION

Whirlpool Corporation
Sebastian County, Arkansas

Arkansas Facility Identification Number: 66-00048

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REMEDIAL ACTION DECISION DOCUMENT (RADD) WHIRLPOOL CORPORATION

1. INTRODUCTION

The former Whirlpool facility is located at 6400 Jenny Lind Road on the south side of Fort Smith, Arkansas (Figures 1 and 2). The facility is approximately 153 acres and includes the main manufacturing building (approximately 1.3 million square feet), adjoining warehouse and administrative offices, and approximately 21 acres of undeveloped land. The facility had been operated by Whirlpool for over 45 years and ceased operation in June 2012.

Prior to the mid-1980s, the facility utilized trichloroethene (TCE) in the former degreaser building located near the northeastern corner of the main building. The use of TCE was discontinued in the mid 1980's. It is believed that constituents in the soil and groundwater identified in the facility investigations were the result of historical work practices by Whirlpool prior to 1981. On February 7, 1983, Whirlpool Corporation (Whirlpool) submitted a notification of Hazardous Waste Activity to the Arkansas Department of Pollution Control and Ecology (APC&EC), now known as Arkansas Department of Environmental Quality (ADEQ), which identified the facility engaging in hazardous waste activities. There are no historical records that document any specific spills or other release incidents from the degreaser building.

Whirlpool entered into a Letter of Agreement (LOA) with the ADEQ on July 10, 2002 to investigate and remediate impacted groundwater at the northern portion of the facility in accordance with the United States Environmental Protection Agency (USEPA) Corrective Action Strategy (CAS). Whirlpool has conducted extensive investigations for the remedial action at the facility. The Revised Risk Management Plan (RRMP) submitted by Whirlpool Corporation on May 21, 2013 recommends remedial alternatives for the corrective action at the facility. No action, containment, removal, in-situ treatment, and institutional controls are among the corrective measure remedies considered for the facility.

This Remedial Action Decision Document (RADD) describes the possible remedies, documents ADEQ's decision for the remedial actions at the facility, and affords the public the opportunity to participate in decisions regarding the hazardous substance remediation within their community. Interested individuals at the Fort Smith area may submit written comments to ADEQ on the RADD. Procedures regarding public comment are included in Section 13 of the RADD.

2. SITE BACKGROUND

The facility is located adjacent to a residential area to the north and industrial/commercial areas to the south, west, and east. A tract of undeveloped land is also present on the east side. Residential properties to the north include single-family homes and multi-family units. A recreational facility (Boys and Girls Club) that includes three buildings, two basketball courts and three baseball fields is located northeast of the facility adjacent to the residential area. No agricultural properties are located in the vicinity of the facility.

The presence of TCE in the shallow groundwater was discovered in the late 1980's when Whirlpool conducted a series of groundwater and soil studies at the facility as part of a project to remove one underground storage tank (UST). The UST was recovered intact, however soil samples taken at the time of the tank removal revealed the presence of elevated TCE concentrations in the soil. Subsequent investigations to assess the potential TCE source area have been conducted to delineate the affected soil and groundwater. Based on the historical process, the primary constituent of concern (COC) is TCE. However, tetrachloroethene (PCE) and TCE daughter products, including cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethene (1,1-DCE), and vinyl chloride (VC) resulting from the natural degradation of PCE and TCE have also been detected in the groundwater monitoring wells.

On August 13, 2002, a scoping meeting was held between ADEQ and Whirlpool which resulted in Whirlpool initiating the off-site delineation of groundwater north of the facility. The delineation included installation and sampling of new monitoring wells. Whirlpool submitted the CAS Work Plan on June 6, 2003. The CAS Work Plan contained information on the status of off-site investigations and provided information to help define the Conceptual Site Model (CSM) for the facility.

The Interim Status Report was submitted on June 25, 2004 providing details regarding the status of off-site investigations. The off-site investigations included off-site delineations in five phases: Phase A, Phase B, Phase C, Phase D and Phase E. Additional monitoring wells were installed from November 2004 through April 2006 during each phase of delineation. The facility met with ADEQ staff in June 2006 to review the status of the off-site delineation and clarify the path forward. Following the meeting, a CAS Work Plan Addendum was submitted on September 1, 2006 and approved on January 25, 2007.

In addition to the above reports, a series of Annual Groundwater Monitoring Reports (AGWM) have been submitted since March 2000. The data from the AGWM reports were evaluated and summarized in the Risk Evaluation

Report (RER) submitted on June 14, 2007. The RER was approved on January 30, 2008. The RER contained information regarding the elements necessary in guiding risk management decisions at the facility. Whirlpool submitted the Risk Management Plan (RMP) on March 27, 2008. The RMP introduced the several alternatives for remedial activities at the facility.

In March 2008, implementation of an interim measure was proposed by the facility to provide a quick response in the core of the plume where the potential for risk to residential areas existed. Whirlpool Corporation utilized the interim measure task as a pilot study to obtain information pertaining to in-situ chemical oxidation and groundwater recovery. These processes were aimed at reducing the concentration of TCE in the groundwater. The facility submitted the Interim Measure Work Plan (IMWP) on March 17, 2008. The IMWP aimed to reduce any potential risk to human health and proposed to target the core of the off-site plume via groundwater pump-and-treat and in-situ chemical oxidation. The IMWP was approved on April 10, 2008.

Due to the generation of wastewater, the facility was offered options to obtain a permit from the Hazardous Waste Division or Water Division of ADEQ depending on the characteristics of the groundwater (hazardous or non-hazardous). Upon the evaluation of the wastewater characteristics, Whirlpool contacted the Water Division regarding an Underground Injection Control (UIC) permit. The permission was granted by the Water Division on April 17, 2009 allowing the facility to initiate the permanganate injection for the remediation of groundwater at the facility based on APC&EC Regulation No. 17.

Whirlpool submitted an Interim Measure Status Report on January 12, 2010. The report provided information regarding the activities conducted at the facility in accordance with the approved Interim Measure Work Plan dated March 17, 2008. The data obtained from the monitoring points adjacent to In-Situ Chemical Oxidation (ISCO) Treatment Wells exhibited progress in the areas where treatment had been applied. ADEQ required the facility to proceed with the groundwater pilot test at monitoring well RW-69 to induce a hydraulic gradient at the facility.

Whirlpool continued to submit progress reports regarding the status of groundwater pilot test at the facility. The progress reports (July 2010 – March 2011) indicated that the in situ permanganate treatments continued to reduce the concentrations of TCE in the immediate vicinity of treatment wells. The interim measure data obtained suggested treating the affected groundwater in the off-site plume using permanganate could be a viable method for remediating the groundwater.

However, the continuation of in-situ remediation (November 2010, March 2011, October 2011 and April 2012) showed the ability to influence the

movement of permanganate across the treatment area was limited by the low transmissivity of the aquifer and the continued monitoring suggested portions of the core of the off-site plume have not been adequately treated. Ultimately, the facility submitted a RRMP on May 21, 2013 to implement a risk strategy for the protection of human health and the environment, which includes monitoring of the groundwater. The RRMP evaluated each potential corrective measure for its relative suitability to meet the goal of protecting human health and the environment.

Figure 3 shows the location of the monitoring wells on-site and off-site. The highest impact of TCE in groundwater on-site has been identified at MW-25 near the northwestern corner of the building. TCE concentration at MW-25 in 2012 was measured at 56,000 micrograms per liter (ug/l). Additional areas of impact (greater than 10,000 ug/l of TCE) have been identified at ITMW-19 with 15,000 ug/l. Together these two points currently constitute the heart of the source area on-site. The groundwater plume extends approximately 1,000 feet to the south from this source area. The southern boundary of affected groundwater remains on-site in this direction. There are no known off-site groundwater impacts to the east, south or west of the Whirlpool property boundaries.

Groundwater with detected concentrations of TCE above USEPA maximum contaminant levels (MCLs) extends to the residential neighborhood north of the facility. North of the main source area, TCE concentrations greater than 1000 ug/l were detected at wells MW-33 and IW-77. The depth to groundwater is routinely observed during the construction of monitoring wells to be 15 to 25 feet below ground surface (bgs). The measured depth to water in the monitoring wells ranges from more than 10 feet bgs to almost zero in the northeast direction from the site. These measurements give a false impression that groundwater is at a much shallower depth than the confined aquifer.

3. SUMMARY OF SITE RISKS

A. HUMAN HEALTH RISKS

A Human Health Risk Assessment (HHRA) was submitted as an appendix to the May 21, 2013 RRMP. The HHRA was conducted to determine potential risks related to current and future human exposure to constituents detected in groundwater, soil, and soil gas at and around the Whirlpool facility. The primary COC is TCE. However, PCE and TCE daughter products including cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE, VC, and several other volatile organic compounds (VOCs) were also retained for evaluation in these media.

On-Site Receptors and Exposure Routes

On-site receptors evaluated for potential exposure to these COCs include 1) routine workers, 2) maintenance workers, and 3) construction workers.

Exposure routes for on-site routine workers from COCs in surface soil include ingestion, dermal contact, inhalation of soil-derived vapors and airborne particulates in outdoor air, and inhalation of soil-derived vapors that migrate through building foundations to indoor air. Exposure routes for on-site routine workers from COCs in subsurface soil include inhalation of soil-derived vapors in outdoor air and inhalation of soil-derived vapors that migrate through building foundations to indoor air. Exposure routes for on-site routine workers from COCs in groundwater include inhalation of groundwater-derived vapors in outdoor air and inhalation of groundwater-derived vapors that migrate through building foundations to indoor air.

Exposure routes for on-site maintenance workers and construction workers from COCs in surface and subsurface soil include ingestion, dermal contact, and inhalation of soil-derived vapors and airborne particulates in work-space air. Exposure routes for on-site maintenance workers and construction workers from COCs in groundwater include ingestion, dermal contact, and inhalation of vapors from exposed groundwater during excavation activities.

Off-Site Receptors and Exposure Routes

Off-site receptors evaluated for potential exposure to these COCs include 1) residents, 2) routine community workers, and 3) community maintenance workers.

Exposure routes for off-site residents from COCs in surface and subsurface soil include inhalation of soil-derived vapors and airborne particulates in outdoor air. Exposure routes for off-site residents from COCs in groundwater include inhalation of groundwater-derived vapors in outdoor air and inhalation of groundwater-derived vapors that migrate through building foundations to indoor air.

Exposure routes for off-site routine community workers from COCs in surface and subsurface soil include inhalation of soil-derived vapors and airborne particulates in outdoor air. Exposure routes for routine community workers from COCs in groundwater include inhalation of groundwater-derived vapors in outdoor air and inhalation of groundwater-derived vapors that migrate through building foundations to indoor air.

Exposure routes for off-site community maintenance workers from COCs in groundwater include incidental ingestion and dermal contact with exposed groundwater, and inhalation of vapors from exposed groundwater in work-space air.

Current Potential Carcinogenic and Non-Carcinogenic Risks

The potential carcinogenic and non-carcinogenic risks to human receptors were estimated by first calculating individual potential risks for each COC. These potential risks were then summed to arrive at a cumulative potential carcinogenic risk and non-carcinogenic risk for each completed exposure pathway.

On-Site Potential Carcinogenic and Non-Carcinogenic Risks

As shown in the following table, none of the summed potential carcinogenic risk estimates exceed USEPA acceptable cancer risk range of 1E-06 to 1E-04 and none of the summed potential non-carcinogenic risks exceed a Hazard Index (HI) of 1 for receptors potentially exposed to chemicals in on-site soils.

Potential vapor intrusion was also assessed for on-site routine workers that could be potentially exposed to chemicals in soil via vapor intrusion using occupational inhalation limits. This approach is consistent with Occupational Safety and Health Administration (OSHA) regulations. In applying this approach, the potential exposure from vapor intrusion should be less than 1. As shown in the table below, the vapor intrusion pathway from chemicals in soil does not result in an unacceptable exposure in the workplace for on-site routine workers.

Summed Potential Risk Estimates for On-Site Soil

On-Site Receptor	Exposure Type	Carcinogenic Risk	Non-Carcinogenic Risk (HI)	Occupational
Routine Worker	Direct Contact	1E-08	0.004	NA
	Vapor Intrusion	3E-07	0.1	2E-06
Maintenance Worker	Direct Contact	1E-09	0.001	NA
Construction Worker	Direct Contact	4E-09	0.0009	NA

HI – Hazard Index

NA – Not applicable. Occupational air standards are only applicable for routine worker vapor intrusion exposures

As shown in the following table, none of the summed potential carcinogenic cancer risk estimates exceed the USEPA acceptable cancer risk range of 1E-06 to 1E-04 for receptors potentially exposed to chemicals in on-site groundwater. However, the summed potential non-carcinogenic risk does exceed an HI of 1 for on-site routine workers via the vapor intrusion pathway, maintenance workers via direct contact, and construction workers via direct

contact which could be potentially exposed to chemicals in on-site groundwater.

As with the on-site soil, potential vapor intrusion was also assessed for on-site routine workers potentially exposed to chemicals in on-site groundwater using occupational inhalation limits. As shown in the following table, the vapor intrusion pathway from chemicals in on-site groundwater does not result in an unacceptable exposure in the workplace for on-site routine workers.

Summed Potential Risk Estimates for On-Site Groundwater

On-Site Receptor	Exposure Type	Carcinogenic Risk	Non-Carcinogenic Risk (HI)	Occupational
Routine Worker	Vapor Intrusion	1E-05	3	8E-04
	Inhalation of Outdoor Air	4E-07	0.1	NA
Maintenance Worker	Direct Contact	5E-05	30	NA
Construction Worker	Direct Contact	5E-06	6	NA

HI – Hazard Index

NA – Not applicable. Occupational air standards are only applicable for routine worker vapor intrusion exposures.

Bold values exceed an HI of 1.

Off-Site Potential Carcinogenic and Non-Carcinogenic Risks

As shown in the following table, none of the summed potential carcinogenic risk estimates exceed USEPA acceptable cancer risk range of 1E-06 to 1E-04 and none of the summed potential non-carcinogenic risks exceed a Hazard Index (HI) of 1 for receptors potentially exposed to chemicals in off-site soils.

Summed Potential Risk Estimates for Off-Site Soil

Off-Site Receptor	Exposure Type	Carcinogenic Risk	Non-Carcinogenic Risk (HI)
Resident	Inhalation of Outdoor Air	6E-08	0.01
Routine Community Worker	Inhalation of Outdoor Air	1E-08	0.004

As shown in the following table, none of the summed potential carcinogenic risk estimates exceed USEPA acceptable cancer risk range of 1E-06 to 1E-04 and none of the summed potential non-carcinogenic risks exceed a Hazard Index (HI) of 1 for receptors potentially exposed to chemicals in off-site groundwater.

Summed Potential Risk Estimates for Off-Site Groundwater

Off-Site Receptor	Exposure Type	Carcinogenic Risk	Non-Carcinogenic Risk (HI)
Resident	Vapor Intrusion Inhalation of Outdoor Air	6E-06	1
		5E-08	0.01
Routine Community Worker	Vapor Intrusion Inhalation of Outdoor Air	2E-07	0.06
		7E-09	0.002
Community Maintenance Worker	Direct Contact	9E-07	0.5

On-site and off-site potable water is provided by the Fort Smith municipal water system. Currently, groundwater is not known to be used as a potable source for drinking water. However, if drinking water wells are installed on-site or off-site, significant potential risks could result from the use of groundwater.

B. ECOLOGICAL RISKS

The facility operated for over 45 years. The surrounding area is developed with little to no viable ecological habitats. No ecological impacts have been identified for the facility and the surrounding area. Additionally, no sensitive ecological receptors have been identified in the vicinity of the facility. As a result, the contaminants attributed to the historical facility operations do not present an ecological threat to the surrounding area.

4. SUMMARY OF REMEDIAL APPROACH

The ADEQ determines whether a release of hazardous substances must be addressed through remedial action(s) and whether the actions taken to address said release are protective of human health and the environment. The two performance standards of the source control are; applicable statutory and regulatory requirements, and final risk goal. The final risk goal must ensure that no potential unacceptable risks to human health or the environment remain at the conclusion of remedial activities. A remedy's cleanup standards can fall within the range of 1×10^{-4} to 1×10^{-6} excess lifetime risk from exposure to a carcinogenic hazardous constituent, and a hazard quotient of 1.0 for non-carcinogens. The final risk goal performance standard developed will generally fall within that range as well. The source control and statutory and regulatory requirement performance standards will determine the need for and the degree of any necessary remedial actions.

Based on the data collected from the investigations conducted at the Whirlpool facility in Fort Smith, Arkansas over a period from 1980 to 2013, the areas of concern are the soil and groundwater impacted by the historical usage of TCE as a degreaser. The "Source Area" is understood to be a localized area near and immediately to the west of the former degreaser building where elevated concentrations of TCE were detected in soil and groundwater (See Figure 4). The impacted soil and groundwater are present within the fenced boundary of the Whirlpool facility (on-site) and impacted groundwater with detected concentrations of TCE above drinking water criteria extends beneath a portion of the off-site residential area north of the facility. The area of impacted soil is an approximately 50 by 250-foot area west of the former degreaser building and the on-site groundwater plume extends approximately 1,000 feet to the south from the source area. The remedial action includes alternatives to reduce concentrations of TCE in the groundwater at the source and eliminate the source to the off-site groundwater plume which will ultimately reduce the concentrations in off-site groundwater.

North, geologically down-slope of the source area, elevated TCE concentrations (greater than 1,000 ug/l) extend approximately 400 feet to a marked depression present in the surface of the weathered shale comprising the lower confining unit near the location of well IW-77. The northern plume extends approximately 1000 feet northeastward past well IW-77. Remedial action to reduce TCE levels in the areas of elevated concentrations near well IW-77 will ultimately reduce the concentrations down-gradient in the northern plume which extends beneath the off-site residential area.

5. SUMMARY OF ALTERNATIVES CONSIDERED IN REVISED RISK MANAGEMENT PLAN

The concentration of COCs in the subsurface soil (impacted area) and groundwater (on-site and off-site) are the main focus of remedial alternatives at the facility. The elected alternative(s) should assure protection of human health and the environment and should eliminate the exposure pathway to the COCs.

A. SUBSURFACE SOILS

The alternatives considered for the impacted subsurface soils are as follows:

No Action – The No Action measure represents a baseline against which other alternatives are compared. This measure does not include remedial activities to address the affected soil on-site and would not limit risk posed by the COCs.

Containment – Containment involves placing a physical barrier which prevents the movement of COCs and therefore provides a means to reduce or eliminate an exposure pathway. Containment technologies like a concrete cover or asphalt cover can effectively isolate soils. The cover prevents contact between impacted soil COC migrations via infiltration into groundwater. The cover could also be engineered to limit vapor intrusion.

Removal – Removal of the impacted soils involves excavation and proper disposal of the soils. Excavation is a proven technology for direct mass removal and is technically feasible for small to moderate soil volumes. Excavation will reduce or eliminate the amount of COC mass.

In-Situ Treatments - The treatment methods are designed to reduce the COCs in the subsurface soils without removing the impacted media. The in-situ treatment technologies for the soils include Biological and Physical/Chemical treatments as follows:

Biological Treatment:

Natural Attenuation – This alternative relies on naturally occurring subsurface biological processes under favorable conditions to achieve site specific remediation objectives over time by reducing the concentration of COCs in the soils.

Enhanced Aerobic/Anaerobic Biodegradation – In-situ biological treatment includes the addition of nutrients, oxygen, and/or acclimated microbes to enhance the natural degradation processes. Biodegradation in the saturated zone can be used for the remediation of impacted soils. The correct site geologic and hydrogeological conditions are very important when considering the use of biodegradation technologies.

Physical/Chemical Treatment:

Vapor Extraction – Vapor extraction includes the addition of a vacuum on the subsurface soils to induce volatilization of organic constituents. Volatilization allows for the COCs to be removed from the subsurface soils in the gas phase.

Chemical Oxidation – In-situ chemical oxidation (ISCO) involves decomposition and in-situ destruction of COCs in the soils using chemical oxidation technologies. Soil reactivity with chemical oxidants or reducing agents is important when considering chemical oxidation. Successful chemical oxidation requires the oxidant to come into direct contact with the contaminant.

Soil Flushing – Soil flushing involves the use of a co-solvent or surfactant using an injection or infiltration process to move the co-solvent or surfactant through the impacted soils with the intent of removing COCs from the soils.

Institutional Controls – Applying institutional controls as a remedial measure involves the implementation of legally enforceable restrictions on land use to prevent exposure to impacted media. By preventing exposure, institutional controls can protect human health.

B. GROUNDWATER

The alternatives considered for the impacted groundwater, both on-site and off-site are as follows:

No Action – The No Action measure represents a baseline against which other alternatives are compared. This measure does not include remedial activities to address the affected groundwater on-site or off-site and would not limit risk posed by the COCs. The No Action measure would effectively amount to unmonitored natural attenuation.

Containment – Containment involves placing a physical barrier which prevents the lateral movement of COCs and therefore provides a means to reduce or eliminate an exposure pathway. Containment technologies like vertical impermeable barriers keyed into an impermeable zone below the contaminated groundwater aquifer would effectively block or redirect groundwater flow.

Removal – Removal involves the actual removal and treatment of the groundwater to remove COCs. The direct removal of COCs from groundwater can be accomplished by air stripping. Air stripping involves the removal of groundwater by pumping. The groundwater is then aerated to remove (volatilize) the COCs which are then trapped in activated carbon filters. The treated groundwater can be returned to the groundwater aquifer by injection or discharged through an ADEQ permitted discharge point.

In-Situ Treatments – These treatment methods are designed to reduce the COCs in the groundwater without removing the impacted groundwater. The in-situ treatment technologies for groundwater include Biological and Physical/Chemical treatments as follows:

Biological Treatment:

Monitored Natural Attenuation (MNA) – This alternative relies on naturally occurring subsurface processes under favorable conditions to

achieve site specific remediation objectives over time to reduce the concentration of COCs in the groundwater. Abiotic degradation changes the chemical composition of TCE through naturally occurring chemical reactions. However, this process is thought to be too slow to be considered a viable alternative for MNA. Aerobic and anaerobic biodegradation reduce TCE concentrations through biological processes carried out by bacteria in the subsurface.

Enhanced Aerobic/Anaerobic Biodegradation – With anaerobic biodegradation, nutrients are added to enhance the natural degradation of COCs through reductive de-chlorination. For reductive de-chlorination to occur, bacteria (i.e. Dehalococcoides) capable of de-chlorination must be present in sufficient quantity. If laboratory analysis indicates bacteria are not present or deficient in quantity, bacteria may be introduced to the groundwater along with the addition of nutrients. Reductive de-chlorination of TCE to DCE can occur under mildly reducing conditions utilizing NO_3^- or Fe^{3+} -reduction; however, the dechlorination of DCE to VC, and VC to ethene requires the stronger reducing conditions of SO_4^{2-} -reduction or methanogenesis.

Both enhanced aerobic and anaerobic biodegradation require a thorough understanding of site geologic, hydrologic and groundwater geochemical conditions to be utilized successfully.

Physical/Chemical Treatment:

Vapor Extraction or Sparging – Vapor extraction includes the addition of a vacuum on the subsurface soil to induce volatilization of organic constituents. Sparging is the process of pumping air into the groundwater to assist in volatilization of the COCs. Volatilization allows for the COCs to be transferred from the groundwater to the subsurface soils in the gas phase. The COCs are then removed from the subsurface soils in the gas phase. Extracted vapors must then be processed through an activated carbon filter to remove the COCs.

Chemical Oxidation/Reduction – ISCO involves the decomposition and in-situ destruction of COCs in the groundwater using chemical treatment technologies. Saturated soil reactivity with chemical oxidants or reducing agents is important when considering the use of chemical oxidation or reduction. Successful chemical treatment requires the chemical agent to come into direct contact with the contaminant. ISCO involves the introduction of an oxidizing agent such as potassium permanganate or persulfate. In situ chemical reduction (ISCR) involves the introduction of a reducing agent, such as Zero Valent Iron, which can be used to destroy COCs in the groundwater. As with anaerobic bio-remediation, the correct

site geologic, hydrogeological, and geochemical conditions are critically important when considering the use of this technology.

Permeable Treatment Beds – Permeable treatment beds include the construction of a down-gradient trench filled with a material designed to either adsorb or chemically react with constituents in groundwater. As groundwater passes through the permeable bed, COCs would be treated or removed. Treatment beds include media (e.g. granular zero valent iron, mulch or other proven materials) that create a strong reducing or oxidizing environment to change chlorinated solvents to nontoxic end products.

Institutional Controls – Applying institutional controls as a remedial measure involves the implementation of legally enforceable restrictions on land use to prevent exposure to impacted media. By preventing exposure, institutional controls can protect human health.

6. PROPOSED/RECOMMENDED REMEDIES

A. SUBSURFACE SOILS

TCE impacted soils are not present off-site. Much of the on-site area where impacted soils are present is covered by asphalt and concrete which can be an effective horizontal barrier. The areas where impacted on-site soils are not currently paved should be paved to increase the surface area of the cover. The cover should be designed to provide run-off of surface storm water and to include an impermeable coating. The entire cover should extend past the impacted soil area in order to reduce the horizontal leaching through the soil column. In addition, institutional controls (restrictive covenants) should be applied to prevent excavation of the on-site impacted soils.

B. GROUNDWATER

Impacted groundwater is present both on-site and off-site. Figure 3 shows the location of the monitoring wells on-site and off-site. The highest impact of TCE in groundwater on-site has been identified at MW-25 near the northwestern corner of the building. TCE concentration at MW-25 in 2012 was measured at 56,000 micrograms per liter (ug/l). Additional areas of impact (greater than 10,000 ug/l of TCE) have been identified at ITMW-19 with 15,000 ug/l. Together these two points currently constitute the heart of the source area on-site. The groundwater plume extends approximately 1,000 feet to the south from this source area. The southern boundary of affected groundwater remains on-site in this direction. There are no known off-site groundwater impacts to the east, south or west of the Whirlpool property boundaries. Natural attenuation will not have a significant effect until these

two areas have undergone significant reduction in TCE concentrations and related “daughter” constituents (See Tables 2 and 3).

In situ chemical treatment (either oxidation or reduction) has been chosen by the ADEQ as a remedy to reduce the elevated TCE concentrations in the on-site and off-site groundwater. Prior to in situ chemical treatments, aquifer material samples will be obtained from both areas and bench tests will be conducted to determine the type and quantity of in situ chemical treatment material required to effectively treat the on-site and off-site groundwater. Aquifer material samples will also be tested for hydrologic and geochemical properties. Application of the chemical treatment will be of sufficient lateral and vertical density to ensure contact between the treatment material and groundwater contaminants. Based on subsequent monitoring results, it may be necessary to expand the treatment areas and/or re-treat the areas until measurable elimination trends in TCE concentrations and other COCs are achieved.

In addition to the chemical treatment remedy, MNA will be conducted for the contaminant plume. Aquifer material and groundwater samples representative of the horizons with impacted groundwater will be obtained for laboratory evaluation. Samples will be collected quarterly for the first two years. Sampling frequency after two years will be evaluated and determined based on groundwater data. These samples should be of sufficient lateral and vertical distribution to adequately define the hydrologic and geochemical makeup of the impacted groundwater flow system. The samples will be tested for hydrologic (hydraulic conductivity, porosity, etc.) and geochemical (dissolved oxygen (DO), Nitrate, Iron (Fe^{+2}), Sulfide, total organic carbon (TOC), etc.) properties, and will be evaluated for the presence of anaerobic bacteria (i.e. Dehalococcoides), as well as the capability of supporting abiotic, aerobic and/or anaerobic degradation of chloroethenes at a sufficient level to remediate the facility within a two year period (see section 11).

7. EVALUATION OF THE PROPOSED REMEDY & ALTERNATIVES

Each remedial alternative was evaluated on the following criteria: Overall protection of human health and the environment, short term effectiveness, long term effectiveness, implementability and cost. Please see Table 1 for alternative comparisons.

8. REMEDIAL ACTION LEVELS

A. SURFACE SOILS

The surface soils at the facility do not contain contaminants above acceptable direct contact risk-based screening levels. Therefore, no Remedial Action Levels (RALs) are required to be established for surface soils.

B. SUBSOILS

The subsurface soils at the facility were evaluated using acceptable direct contact risk-based screening levels for site workers and construction workers. Subsurface soils at the facility were also evaluated using site-specific risk-based groundwater protection screening levels. No contaminants in subsurface soils exceeded the acceptable direct contact risk-based screening levels for site workers or construction workers. However, TCE did exceed the site-specific risk-based groundwater protection screening level. No other contaminants in subsurface soils exceeded the respective site-specific risk-based groundwater protection screening levels. Therefore, TCE is the only COC for subsurface soil. The Remedial Action Level for TCE in subsurface soils is presented in the following table:

Remedial Action Level for On-Site Subsurface Soils	
Chemical	Subsurface Soil Remedial Action Level (mg/kg) ⁽¹⁾
Trichloroethylene (TCE)	0.129

(1) Site-Specific Risk-Based Protection of Groundwater Soil Screening Level – DAF 43.3 (Risk Evaluation Report June 2007)

C. GROUNDWATER

Remedial Action Levels for groundwater are presented in the following table:

Remedial Action Levels for On-Site and Off-Site Groundwater

Chemical	Remedial Action Level (ug/L) ⁽¹⁾
Acetone	12,000 ⁽²⁾
Benzene	5.0
Bromodichloromethane	80
Bromoform	80
Bromomethane	7.0 ⁽²⁾
2-Butanone	4,900 ⁽²⁾
Carbon Disulfide	720 ⁽²⁾
Carbon Tetrachloride	5.0
Chlorobenzene	100
Chloroethane	21,000 ⁽²⁾
Chloroform	80
Chloromethane	190 ⁽²⁾
Dibromochloromethane	80
1,1-Dichloroethane	2.4 ⁽²⁾
1,2-Dichloroethane	5.0
1,1-Dichloroethene	7.0
cis-1,2-Dichloroethene	70
trans-1,2-Dichloroethene	100
1,2-Dichloropropane	5.0
1,3 Dichloropropene	0.41 ⁽²⁾
Ethylbenzene	700
2-Hexanone	34 ⁽²⁾
4-methyl-2-pentanone	1,000 ⁽²⁾
Methylene chloride	5.0
Styrene	100
1,1,2,2-Tetrachloroethane	0.066 ⁽²⁾
Tetrachloroethene (PCE)	5.0
Toluene	1,000
1,1,1-Trichloroethane	200
1,1,2-Trichloroethane	5.0
Trichloroethene (TCE)	5.0
Vinyl chloride	2.0
Xylenes (total)	10,000

(1) Maximum Contaminant Level (USEPA May 2013)

(2) USEPA Tapwater Screening Level (MCL and Maximum Contaminant Level Goal Unavailable)

9. JUSTIFICATIONS FOR SELECTIONS

ADEQ has determined containment of the soils and In-Situ Chemical Oxidation/Reduction coupled with Monitored Natural Attenuation for the groundwater are the most effective remedial approaches at the Whirlpool facility.

A. SUBSURFACE SOILS

A containment based corrective measure would provide protection of human health and the environment since it reduces the exposure to the impacted soils. In addition, containment would reduce and prevent the downward migration of water through the contaminated soils; thus reduces the concentration of TCE transferred from soil to groundwater. This reduction mobility of TCE bound in soil will assist the groundwater remedy in meeting the RALs. This remedy will be coupled with an institutional control to prevent unauthorized excavation of the on-site impacted soils.

B. GROUNDWATER

In-Situ Chemical Oxidation/Reduction to reduce areas of elevated TCE concentrations coupled with Monitored Natural Attenuation would be effective in lowering the concentration of TCE in the groundwater both off-site and on-site to the RALs provided laboratory tests deem these to be viable remedies. These remedies will also be coupled with an institutional control to ensure that there is no on-site use of the contaminated groundwater.

10. SELECTED REMEDY/SITE PLAN

A. SURFACE AND SUBSURFACE SOILS

The entire impacted soil surface area will be covered with asphalt and an impermeable coating. The cover will be designed to prevent the water from migrating through the contaminated soils. The cover will be coupled with an institutional control to prevent unauthorized excavation of the on-site impacted soils. In addition, Whirlpool will implement a soil gas monitoring program to be sampled on a quarterly basis. Pending results, sampling frequency will be evaluated to determine if semiannual sampling for the remainder of a five year period is appropriate to ensure that vapor intrusion continues to be an incomplete pathway. Soil gas samples will be collected at approved monitoring points where groundwater concentrations exceed the MCL at or near the soil gas sampling point. The cost for this remedial action is estimated to be \$600,000.00.

B. GROUNDWATER

Three treatment areas of groundwater with elevated TCE concentrations, both off-site and on-site will be constructed. These areas will be treated with an in situ chemical treatment (Figures 4 and 5). The type and quantity of oxidant or reducing agent will be determined by bench testing of impacted aquifer materials. The aquifer materials will also be tested to determine the nature of natural attenuation occurring at the facility. The aquifer will be evaluated for the following abiotic, aerobic and anaerobic conditions. The aquifer will also be evaluated for the presence of anaerobic bacteria (i.e. Dehalococcoides) and the capability of supporting chloroethene reductive reactions at a sufficient level to remediate the facility within a reasonable amount of time. Figures 4 and 5 show the planned locations where soil profiles and soil samples will be obtained as well as locations where a conductivity/hydraulic profiling tool will be used and aquifer slug testing conducted.

In-situ chemical treatments will be completed using GeoProbe® temporary points. Area 1 (the on-site source area) is currently estimated to be 320 feet by 80 feet, and as such would require approximately 256 injection points. Area 2 (north of Ingersoll Avenue) is estimated to be 210 feet by 20 feet and as such would require approximately 42 injection points. Area 3 (near IW-77) is estimated to be 90 feet by 30 feet, and as such would require approximately 27 injection points. Injection points may be added or removed depending upon the hydraulic conductivity and lithology identified during the pre-design phase of work and resulting design. Based on subsequent monitoring results it may be necessary to expand the treatment areas and/or re-treat these areas until a satisfactory reduction trend in TCE concentrations is achieved. It is important to note that Area 2 will additionally act as a permeable treatment wall intercepting possible groundwater flow from the source area to north of the facility boundary.

In addition to the chemical treatment remedy, MNA will be conducted for the on-site and off-site plume. The monitoring wells to be sampled include:

Plume Boundary Wells				
MW-50	MW-60	MW-61	MW-67	MW-66
MW-63	MW-62	MW-36	MW-27	MW-28
ITMW-16	ITMW-2	MW-22	ITMW-4	ITMW-6
MW-29	ITMW-20	MW-26	MW-31	MW-39
MW-40	IW-72	MW-68		

On-Site Wells				
MW-25	ITMW-19	ITMW-17	ITMW-11	ITMW-12
ITMW-18	ITMW-15	MW-38	MW-33	MW-65
MW-35R	IW-80	MW-34	MW-32	ITMW-21
ITMW-7	ITMW-10	ITMW-9	ITMW-1	ITMW-13
ITMW-14				

Off-Site Wells				
IW-73	IW-74	MW-41	IW-76	IW-77
MW-71	MW-46R	RW-69	MW-55	MW-56
MW-57	MW-58			

Plume boundary wells will be analyzed for MNA indicator parameters to determine background values against which plume well parameters can be compared. The monitoring well samples will be tested for COCs (see Table 2) and geochemical properties (see Table 3).

The cost for these remedial actions is estimated to be \$5,400,000.00.

C. Placement of an Institutional Control

In order to further protect human health and prevent future groundwater use from the aquifer, institutional controls (ICs) should be implemented at the facility. A deed notification will be filed with the appropriate land records office. The deed notification would identify the kinds of contaminants present, and describe activities that should not be conducted at the facility and grant site access to ADEQ. During the performance of routine groundwater monitoring at the facility, a facility evaluation will be conducted to ensure that there is no on-site use of the contaminated groundwater.

Within sixty (60) days of the effective date of this RADD, the Facility must provide documentation of a deed restriction for the Facility.

11. EFFECTIVENESS MONITORING PROGRAM

A Quarterly Progress Report summarizing all remediation activities undertaken during the preceding calendar quarter should be submitted to ADEQ. The quarterly report shall include the following information:

- Soil Gas Monitoring Report – To monitor the soil gas concentration to confirm the groundwater-derived vapors are not migrating and that vapor intrusion continues to be an incomplete pathway. Please see Figure 6 for proposed sampling locations.

- Groundwater Monitoring Report – To monitor the concentration of COCs in the groundwater including TCE and daughter products (Table 2), and the geochemical parameters (Table 3) necessary to verify the effectiveness of the natural attenuation.

An Annual Progress Report summarizing the results of the groundwater remedial activities shall be submitted annually on January 15 for the previous years' activities to the citizens residing in the neighborhoods north of the Facility, city council, and ADEQ.

The condition of the soil cover should be assessed annually. This assessment should be included in the fourth quarterly report of each year.

Two years after initiating the remediation outlined in this RADD, Whirlpool is required to submit a technical review of the remedial activities and status of the remediation at the Whirlpool facility. This technical review shall assess the need for necessary further action beyond continued MNA. If after two years, there is not a significant reduction in COCs, Whirlpool will be required to submit plans for a separate remedial alternative to address the subsurface soils and on and off-site groundwater. The alternative remedial plan must be submitted within thirty (30) days of written notice by ADEQ that MNA has not been effective in greatly reducing the COCs.

12. SCHEDULE

A Final Remedy Work Plan containing the design specifications was submitted on July 16, 2013.

- All work plans submitted by the facility shall be updated to include the requirements of this RADD within 30 days of the effective date of the RADD.
- Whirlpool shall begin remediation of the TCE plume within 60 days after the effective date RADD.
- Within sixty (60) days of the effective date of this RADD, the Facility must provide documentation of deed restrictions or other legally binding restrictive mechanism for the facility which is impacted by the groundwater contamination.
- Quarterly reports will be due on February 15, May 15, August 15, and November 15 for the previous quarter's activities.
- Annual Progress Reports are due on January 15 for the previous years' groundwater remediation activities.
- The technical review of the remedial activities will be due December 31, 2015.

13. COMMUNITY PARTICIPATION

The notice of the RADD will be published in the Times Record by ADEQ to receive public comment. The public comment period for this RADD is thirty (30) calendar days. Due to public interest, ADEQ will hold a public meeting (public hearing). The day and time of the meeting will be included in the public notice.

Documents that aided in the development of this RADD are included in the administrative record. The administrative record for Whirlpool may be reviewed at the following locations:

Arkansas Department of Environmental Quality
Public Outreach and Assistance Division
5301 Northshore Drive
North Little Rock, AR 72218-5317

or

Fort Smith Public Library
3201 Rogers Ave
Fort Smith, AR 72903

14. COORDINATION WITH OTHER DIVISIONS/AGENCIES

It is important to involve/inform other divisions of ADEQ and other agencies as applicable, in the development of a RADD. To keep the USEPA informed of all remedial action work, the USEPA Region 6 will be provided a copy of the Public Notice and RADD for review and comment.

INTERNAL COORDINATION

ADEQ Divisions	Sent Notice of Decision
Water	Yes
NPDES	Yes
Air	Yes
Solid Waste	Yes
Regulated Storage Tanks	Yes
Environmental Preservation And Technical Services	Yes
Mining	Yes

EXTERNAL COORDINATION

Other State and Federal Organizations	Sent Notice of Decision
U.S. EPA, Region 6	Yes
AR Office of Emergency Services	No
AR Dept. of Health	Yes
AR State Clearinghouse	Yes
AR State Historic Preservation	Yes
AR Natural Heritage Commission	Yes
AR Game & Fish Commission	Yes
U.S. Army Corps of Engineers	Yes

The RADD was also sent to all applicable branches/sections of the Hazardous Waste Division, and to all division and agencies listed above.

TABLES

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Table 1- Comparison of Remedial Alternatives

Remedial Alternative	Overall protection of human health and the environment	Compliance with ARAR	Long term effectiveness	Reduction of toxicity, mobility, or volume through treatment	Short term effectiveness	Implementability	cost	Community Acceptance
No Action	No	No	No	No	No	No	N/A	No
Containment – Horizontal Barriers (Asphalt Cover)	Yes, protective on-site	Yes	Yes, regular maintenance is required	No, only reduces mobility of water through source area	Yes	Yes	\$600,000	Acceptable if coupled with restrictive covenant
Containment – Vertical Barriers (Slurry Wall)	Yes	Yes	Yes	No, only reduces mobility of on-site impacts to off-site	Yes	Yes, however due to electric substation next to facility, difficult to implement.	\$2,100,000	Potentially Acceptable
Removal – Soil (Excavation and Disposal)	Yes	Yes	Yes	Yes, reduces volume of contaminated soil	Yes, minimal effect due to high level of COCs in the groundwater comparing to soil	No, due to physical constraints like depth of contamination, surrounding structures & subsurface utilities	\$9,500,000	Acceptance not likely due to limited benefit to the concentration of COCs in the groundwater
Removal - Groundwater – Extraction Wells and Extraction Trench (Pump & Treat)	Yes	Yes	Yes, reduces toxicity	Yes, reduces mobility of on-site impacts to off-site and reduces toxicity	Yes, effective in transmissive portions of aquifer	Potentially however difficult due to physical constraints like the presence of utilities and structures in addition to variation in the flow of groundwater	\$3,200,000	Potentially Acceptable

Table 1- Comparison of Remedial Alternatives

Remedial Alternative	Overall protection of human health and the environment	Compliance with ARAR	Long term effectiveness	Reduction of toxicity, mobility, or volume through treatment	Short term effectiveness	Implementability	cost	Community Acceptance
In-Situ Treatment-Chemical Oxidation/Reduction	Yes	Yes	Yes, reduces source COCs which in turn reduces the plume	Yes, reduces toxicity	Yes, reduces toxicity in a short period of time	Yes, it is effective in areas of elevated TCE concentrations but not favored site wide due to large number of wells required.	\$4,500,000	Acceptable since it reduces the COCs
In-Situ Treatment – Permeable Treatment Beds	Yes	Yes	Yes, reduces COCs	Yes, reduces mobility and toxicity	Yes, minimally effective due to the need for groundwater to pass through the media	Potentially, however difficult due to physical constraints like the presence of structures and utilities and low groundwater flow	\$4,800,000	Potentially Acceptable
In-Situ Treatment – Enhanced Biodegradation	Yes	Yes	Yes, reduces source COCs	Yes, reduces volume, mobility and toxicity	Yes, time is required to reduce the concentration of COCs	No, use may be limited due to high COC concentration	\$2,300,000	Potentially Acceptable
Monitored Natural Attenuation	Yes	Yes	Yes, COCs decrease over time	Yes, reduces volume, mobility and toxicity	No, minimally effective due to time required	Yes	\$900,000	Potentially acceptable when combined with on-site remedy
Institutional Controls – On-site	Yes	Yes	Yes	No Reduction	Yes	Yes	TBD	Potentially acceptable when combined with additional remedial option

Table 2. Constituents of Concern

Acetone
Benzene
Bromodichloromethane
Bromoform
Bromomethane
2-Butanone
Carbon Disulfide
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
Dibromochloromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
cis-1,2-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
1,3 Dichloropropene
Ethylbenzene
2-Hexanone
4-methyl-2-pentanone
Methylene chloride
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene (PCE)
Toluene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene (TCE)
Vinyl chloride
Xylenes (total)

Table 3. MNA Evaluation Constituents

Analysis
Ethene/Ethane
Methane
Manganese
Dissolved Oxygen
Nitrate/Nitrite
Iron ⁺³
Sulfate
Iron ⁺²
Sulfide
Oxidation Reduction Potential (ORP)
pH
Total Organic Carbon
Temperature
Specific Conductance
Carbon Dioxide
Acetylene
Chloroethanol
Alkalinity
Chloride
Hydrogen
Volatile Fatty Acids (Acetic Acid)
Phosphate
Ammonia
Dehalococcoides
Vinyl Chloride Reductase

FIGURES

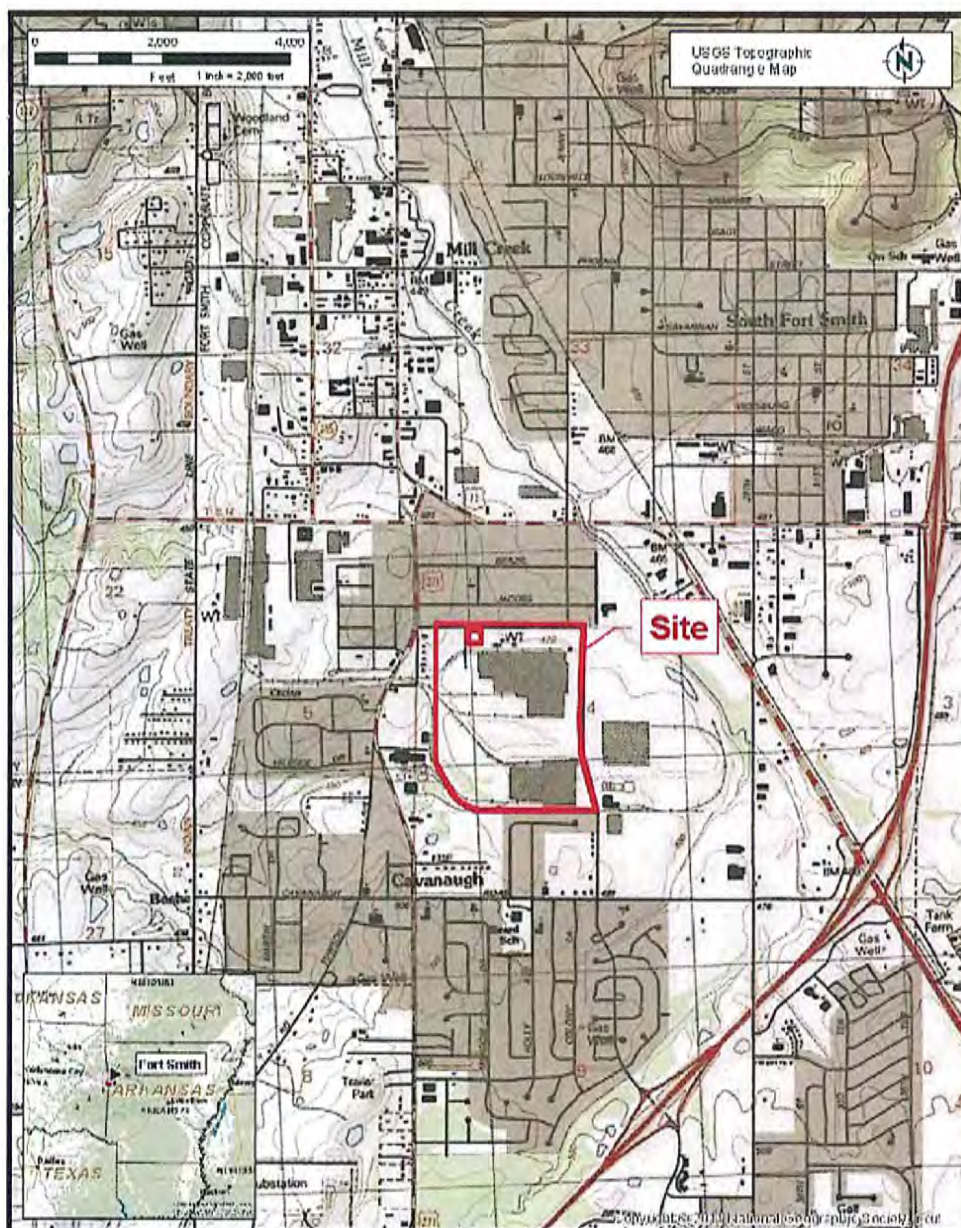


Figure 1. Portion of USGS 7.5 minute quadrangle showing topography at Whirlpool facility and approximate location of property boundary.

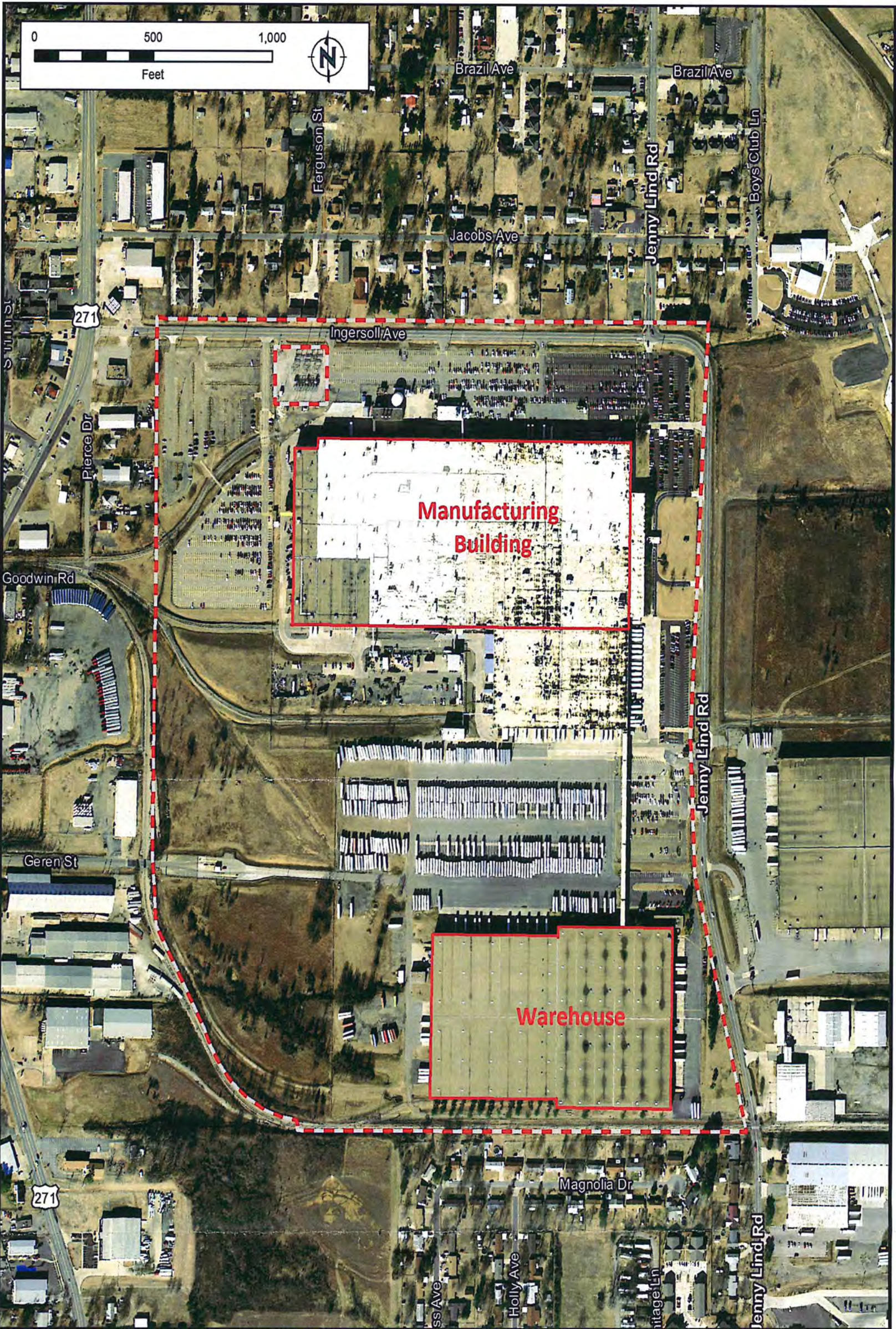
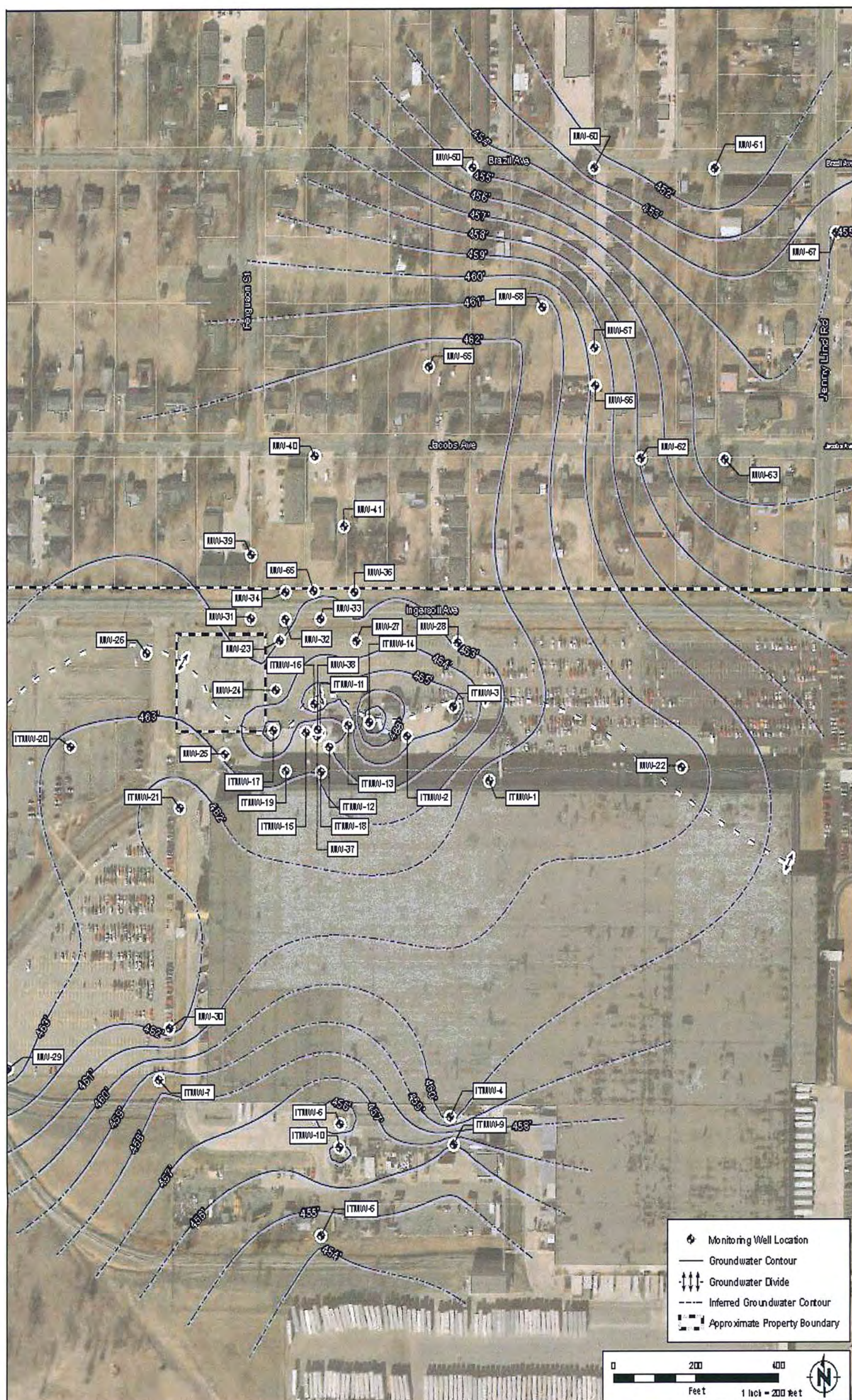


Figure 2. Whirlpool facility property boundary.



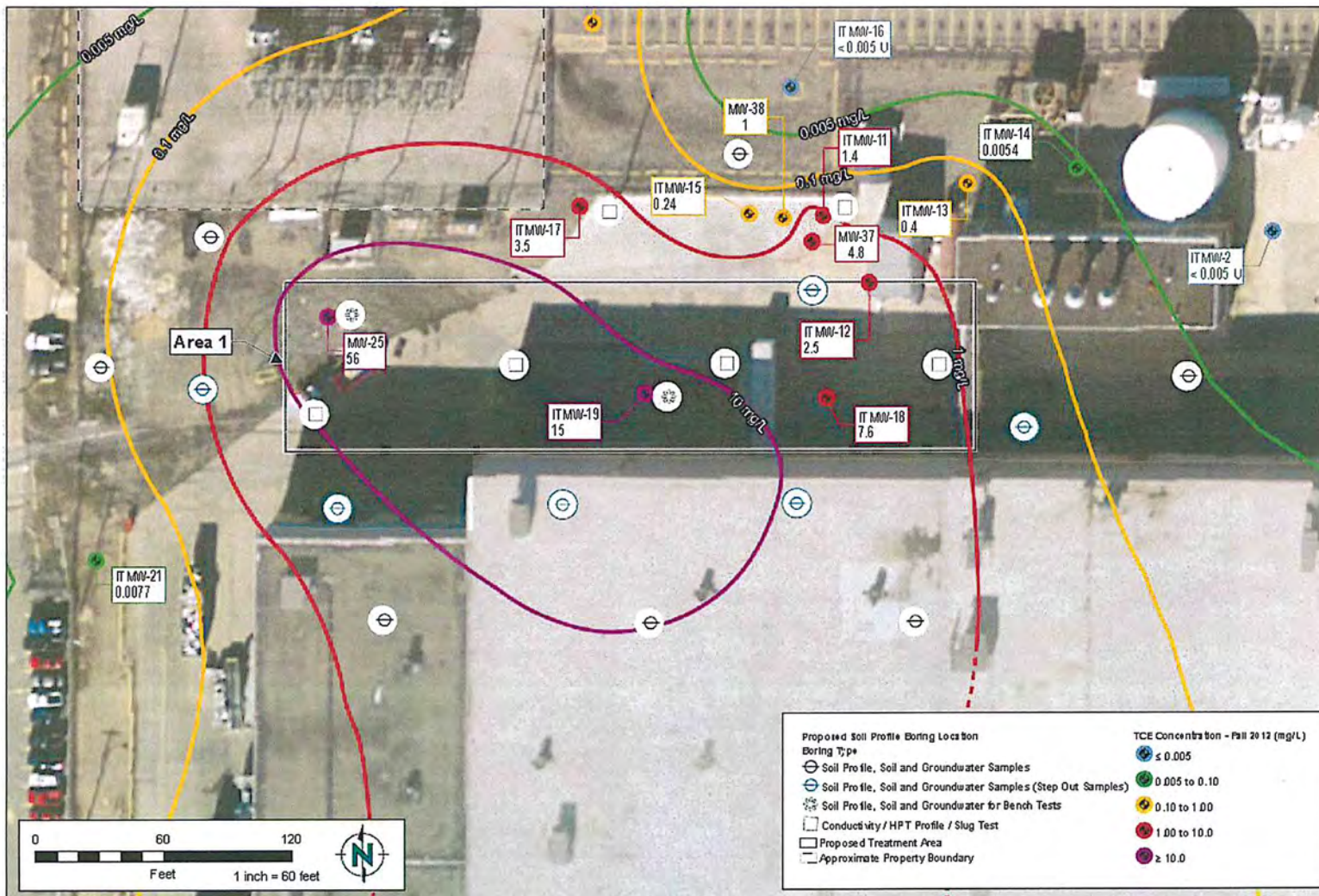


Figure 4. Source area (Area 1) with existing monitoring wells and proposed groundwater and soil sampling sites.

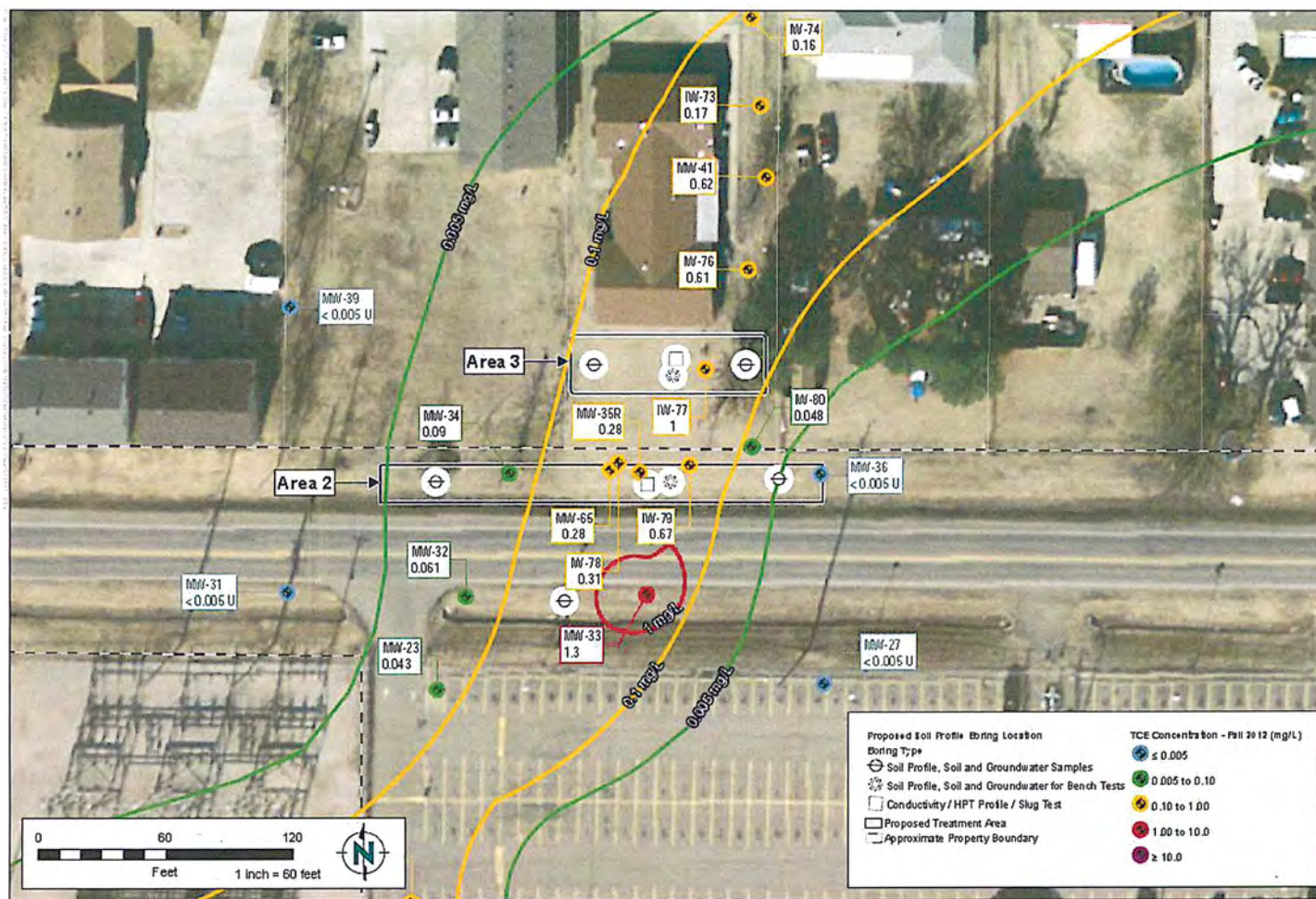


Figure 5. Secondary areas of elevated TCE concentration (Areas 2 and 3) with existing monitoring wells and proposed groundwater and soil sampling sites.

**RESPONSE TO COMMENTS
&
FINAL DECISION
on the
REMEDIAL ACTION DECISION DOCUMENT (RADD)**

**Whirlpool Corporation
6400 Jenny Lind Road
Fort Smith
Sebastian County
Arkansas**

AFIN: 66-00048

A. INTRODUCTION

On October 14, 2013, the Arkansas Department of Environmental Quality – Hazardous Waste Division (ADEQ) proposed a Remedial Action Decision Document (RADD) for the Whirlpool Corporation site located at 6400 Jenny Lind Road, Fort Smith, Sebastian County, Arkansas. This RADD outlines the proposed remedy for the property.

This Response to Comments and Final Decision addresses and documents for the public record the comments and issues raised concerning the notice of the RADD, provides the Department's response to the issues raised during the public participation process; and sets forth the final decision and approval of the RADD attached herein.

B. SELECTED REMEDY

The selected remedy for the Whirlpool Corporation site is set forth in the attached final Remedial Action Decision Document (RADD).

Within thirty (30) days of completing all activities outlined in the RADD, the Whirlpool Corporation shall submit to ADEQ for review and approval a completion report. The completion report shall include information to document that no unacceptable risks, as described in A.C.A. § 8-7-502), remain on-site as a result of the release of hazardous substances, and the site has been remediated in accordance with the provisions set forth in the RADD. The completion report shall be reviewed by ADEQ and, upon written approval by ADEQ, a letter of No Further Action will be issued.

C. PUBLIC PARTICIPATION ACTIVITIES

The ADEQ issued a public notice of the RADD on October 14, 2013. Notice was published in the Times Record on October 14, 2013. The public comment period closed on November 18, 2013. A public hearing was held on November 12, 2013, and several written and oral comments were received prior to the end of the comment period.

D. PUBLIC COMMENTS AND THE DEPARTMENT'S RESPONSE

The following comments from Environ, on behalf of Whirlpool, were received on November 18, 2013:

Comment #1 (Technical Review Schedule):

Clarification of certain specific schedule requirements contained outside Section 12 which create inconsistencies with the schedule in Section 12 are beneficial to all parties. For example, on page 20, the RADD states that "Whirlpool shall begin remediation of the TCE plume within 60 days after the effective date RADD". How this requirement fits with the schedule in Section 12 or would be interpreted is unclear. Whirlpool is actively engaged in efforts necessary and required by ADEQ to assure a robust full scale remedy implementation that will include additional investigations, preliminary design, bench and pilot scale testing, and full scale design before implementation of the full scale remedy. Keeping the referenced statement in the Final RADD requires ADEQ to define "remediation" so Whirlpool can meet ADEQ RADD expectations. The statement could be misinterpreted by the public and create the unintended expectation that ISCO will begin as soon as 60 days, which is not the case, and which would be technically not feasible.

Response:

The selected remedy must commence within 60 days of the effective date of The RADD. If the selected remedy does not show significant reduction in the site related contaminant levels in 2 years, Whirlpool must submit an alternative plan for consideration. No change to the RADD is warranted.

Comment #2 (Start Dates and Performance Milestones):

The most significant schedule change proposed that will best address the progress being made on the site within the practical limitations that exist with the plan is related to the technical review of remedial activities proposed by ADEQ in the RADD by December 31, 2015. As outlined in the Work Plan requested by ADEQ and submitted by Whirlpool in July 2013, full scale implementation of the first phase of ISCO will not take place until 2015 resulting in insufficient time to determine the true effectiveness of the remedy. A submittal too early in the evaluation process will likely result in inconclusive data or data trends that have not been substantiated within an appropriate timeframe. Providing an additional year for this technical review will allow for the implementation of the Phase I injection program and sufficient monitoring after the implementation to provide data that will aid in assessing the effectiveness of the ISCO treatment and determinations as to

whether technical adjustments to the injection program need to be made as the remedy proceeds.

With the various phases of the proposed remedy implementation, Whirlpool requests all implementation dates and performance milestones except those specifically identified in Section 12 be developed, agreed to and enforced through ADEQ approved work plans, work plan updates or addendums. The work plans ADEQ requires in the RADD for review and approval before any work can commence at the site should be the detailed basis for moving forward including determining effectiveness in meeting all schedules and deliverables. A draft schedule was provided in the Work Plan submitted to ADEQ on July 16, 2013. While this schedule will be updated based on Final RADD requirements, it illustrates the framework Whirlpool is requesting ADEQ consider.

It should also be noted that delays in schedule outside of Whirlpool's control may affect the schedule outlined in the RADD. For example: local and State permitting delays, work plan approvals, off-site property access issues and adverse weather, etc. are not addressed nor are they afforded a framework for their potential impact to schedule in the RADD. Whirlpool pledges to work diligently in all aspects of implementation, but it is not uncommon for plans of this nature to reflect the realities of issues that might be outside the control of either Whirlpool or ADEQ. Thus, we propose the RADD should be revised to reflect that such delays may be presented to ADEQ and approved by ADEQ revising the schedule set forth administratively without formally reopening the RADD, which could actually result in further delay.

Response:

The selected remedy must commence within 60 days of the effective date of The RADD. If the selected remedy does not show significant reduction in the site related contaminant levels in 2 years, Whirlpool must submit an alternative plan for consideration. No change to the RADD is warranted.

Comment #3 (Constituents of Concern):

The Draft RADD states, "Based upon the historical process, the primary constituent of concern (COC) is TCE. However tetrachloroethene (PCE) and TCE daughter products, including cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethene (1,1-DCE) and vinyl chloride (VC) resulting from the natural degradation of PCE and TCE have also been detected in the groundwater monitoring wells". Other sections of the Draft RADD (listed below) include additional COCs not included in the COCs documented to be present at the site. Moreover, historical site activities do not warrant the inclusion of these additional COCs. Therefore Whirlpool requests ADEQ limit the Remedial Action Levels (RALs) table and COC Table 2 to TCE, PCE cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE and VC as the COCs for the site.

To maintain consistency through the RADD, Table 2 titled Contaminants of Concern should be changed to Constituents of Concern.

Response:

The Human Health Risk Assessment mentions all concentrations of chemicals are assumed to be site-related and all detected chemicals are included in the risk assessment, regardless of their detection frequency. Therefore, all detected chemicals used in the Human Health Risk Assessment are included as Constituents of Concern and have Remedial Action Levels. To maintain consistency throughout the RADD, Table 2 has been re-titled as "Constituents of Concern" and includes all Constituents of Concern that require remedial action levels that are referenced in Section 8 of the RADD.

Comment #4 (Off-Site Soils):

Certain sections of the RADD do not clearly distinguish between on-site soils and off-site soils when discussing risk. With no known off-site impacts to soil there is no documented risk associated with off-site soil, so any discussion of risks associated with soil should clearly reference only on-site soil, and should make clear that there are no off-site impacted soils.

Response:

The text and tables in Section 3.A. and Section 8 mention there are no unacceptable risks due to direct contact with on-site and off-site soils. However, Section 8.B. does mention TCE is the only contaminant that exceeds the site-specific risk-based groundwater protection screening level for subsurface soils. This is shown on the table labeled "Remedial Action Level for On-Site Subsurface Soils". No contaminants in off-site soils exceeded direct contact risk-based screening levels or groundwater protection screening levels; therefore, no table was included for off-site soil. No change to the RADD is warranted.

Comment #5 (Groundwater Ingestion Pathway):

The RADD sets forth a summary of human health risks in Section 3. However it appears the risk associated with off-site groundwater ingestion has been omitted. All other exposure routes are clearly defined in the text with tables documenting the basis for the risk. There is no such discussion or presentation of data to substantiate the risk from off-site groundwater ingestion. There is only a single sentence statement at the very end of this section that states "However, if drinking water wells are installed on-site or off-site, significant potential risks could result from the use of groundwater."

Without the inclusion of the potential risk associated with off-site groundwater, there is no basis for incorporation of any future institutional control into the determination of future potential risk. Therefore, Whirlpool requests ADEQ acknowledge and include the current and future groundwater exposure risks and acknowledge that risk-based RALs can be applied to on-site and off-site groundwater until appropriate, enforceable institutional controls have been recorded to the satisfaction of ADEQ.

Finally, on page 4, the RADD accurately states that the depth to groundwater is routinely observed during the construction of monitoring wells to be 15 to 25 feet below ground surface but also notes that the measured depth in completed wells may be less in the

northeast portion of the off-site area. Because the measured depth in these particular wells may be related to confined aquifer conditions leading to artesian conditions impacting the measured depth to water within the monitoring well, this statement in the RADD does not impact the selected remedy and measured depth in the monitoring wells may not reflect actual groundwater depth. For these reasons, this statement should be deleted from the RADD.

Response:

The potential risks associated with the ingestion of off-site groundwater is discussed and presented in Section 3.A. The potential combined direct contact risk (ingestion, inhalation, and direct contact) for the community maintenance worker is $9E-07$ (carcinogenic risk) and 0.5 (non-carcinogenic risk). The ingestion portion of this potential risk is $2E-08$ (carcinogenic) and 0.006 (non-carcinogenic). The community maintenance worker was the only receptor that was quantitatively evaluated for the ingestion pathway in the Human Health Risk Assessment. Potable water is supplied by the Fort Smith municipal water system. However, since contaminants in groundwater exceed maximum contaminant levels (MCLs), potential risks to residents or community workers could result from the use of groundwater if drinking water wells are installed on-site or off-site.

Since most of the site contaminants that are found in groundwater off-site have MCLs, a risk-based RAL for off-site groundwater is inappropriate. No change to the RADD is warranted.

To more accurately reflect the groundwater condition off-site, the last sentence of Section 2 has been edited to state "The measured depth to water in the monitoring wells ranges from more than 10 feet bgs to almost zero in a northeast direction from the site. These measurements give a false impression that groundwater is at a much shallower depth than the confined aquifer."

Comment #6 (Effectiveness of Remedy):

Timely and appropriate determination of effectiveness of the remedy is critically important. The effectiveness determinations will be used to evaluate whether the selected remedial actions are achieving the desired goals and determining interim and final success or failure. Whirlpool is committed to implementing a successful project; therefore the methods and criteria used to evaluate the project should be clearly defined. Whirlpool requests ADEQ use the work plan document(s) to clearly define interim and final goals rather than the Final RADD.

Response:

The RADD is the document used to define the final remedial action levels that must be achieved by Whirlpool. No change to the RADD is warranted.

On-site, institutional controls in conjunction with an asphalt surface and impervious coating will be used to address surface soil impacts and mitigate risks associated with exposure to on-site soils. The effectiveness of a remedial measure off-site may also be

evaluated on a risk based method. As the remedy implementation process moves forward, circumstances may change resulting in changes to risks associated with off-site receptors, so it is important to allow flexibility in the path chosen to reach the site endpoint. Therefore the RADD should be amended to make clear that a no further action document may be obtained either through (a) the achievement of RALs for the relevant COCs by a combination of ISCO treatment, institutional controls and monitored natural attenuation or (b) a site specific analysis demonstrating that risk associated with all potential pathways has been reduced to acceptable regulatory levels based on a combination of ISCO treatment, institutional controls, and monitored natural attenuation.

Response:

Institutional controls as part of a remedy for off-site areas may be used as interim measures to prevent exposure to site contaminants. However, the ultimate goal of the remedial actions is to meet the RALs. No change to the RADD is warranted.

Comment #7 (Institutional Controls):

There are multiple points in the RADD requiring institutional controls that incorporate specific language concerning the control of future on-site exposures. An example is in Section 9 Justification for Selections, A. Subsurface Soils "This remedy will be coupled with an institutional control to prevent excavation of the on-site impacted soils." This sentence implies that excavation of on-site soil should never be allowed. The RADD should state that proposed remedies will be coupled with an institutional control to prevent unauthorized excavation of the on-site impacted soils. The intent of on-site institutional controls is not to prohibit the excavation of on-site soils, but to require that such activities be conducted in accordance with approved site specific risk management plans that will facilitate the full redevelopment of the site.

Response:

The RADD has been changed to incorporate "unauthorized excavation" of on-site impacted soil.

In Section 10 under "Selected Remedy/Site Plan, C. Placement of Institutional Control", it states in the second paragraph: "Within sixty (60) days of the effective date of this RADD, the Facility must provide documentation of a deed restriction for the Facility." This requirement should be revised to make clear that Whirlpool will submit a draft restrictive covenant prior to recording to allow for ADEQ comment.

Response:

ADEQ anticipates submittal of a draft institutional control allowing adequate time for review and filing to meet the 60 day deadline in the RADD. No change to the RADD is warranted.

The following comments were received by citizens living near the Whirlpool property:

Comment #8:

Ms. Carolyn Nichols, living at the residential property located at 1601 Jacobs, has expressed concern regarding the water accumulated at the surface of her yard. She stated the water accumulated at the yard could potentially be groundwater contaminated with TCE.

Response:

The same clayey silt that keeps contaminant vapors from entering buildings above the contaminated groundwater plume also keeps the contaminated water at a depth of 18-20 feet below the ground surface. Water at the surface is runoff from storm events and because of this same clayey silt, storm water takes longer to absorb into the ground. No change to the RADD is warranted.

Comment #9:

A number of citizens living in the area expressed concern regarding the health of their family due to TCE contamination. These individuals are requesting the cleanup of TCE at the site by Whirlpool Corporation. This inquiry is made by the following individuals on November 12, 2013: Waltrand Phillips, Joyce Mills, Raymond Nelms, Russ Grettum and Neal Morrison.

Response:

The remedy selected for the cleanup of TCE at the whirlpool site is protective of human health and the environment. The Final Remedy selected has been used at similar sites across the United States and meets the remedial action criteria acceptable to ADEQ. Whirlpool has conducted extensive investigations for the remedial action at this site and will continue the efforts toward remediation of TCE to the levels that will be protective of human health and the environment. The final remedy includes the treatment of contaminated groundwater on-site and off-site in order to eliminate or reduce the concentration of TCE in the groundwater plume. The on-site impacted soil will be covered with asphalt and an impermeable coating to prevent water migration through the impacted soil. In addition, a soil gas monitoring program will be implemented to insure that vapor intrusion continues to be an incomplete pathway. The remedial action will also include the placement of institutional controls to prevent future groundwater use from the aquifer. The Arkansas Department of Health has requested future monitoring data to allow completion of a Health Consultation for this area. This Health Consultation will evaluate health concerns. No change to the RADD is warranted.

Comment #10:

The following comments were made verbally at the public hearing conducted on November 12, 2013:

Mance Fowler

I think I basically said all I want to say about it. What type of remark are you wanting? What are you wanting to know how I feel about this. I think that just about everybody here believes that ADEQ hasn't really done what we expected them to do. We expected you to go in and make Whirlpool clean all of this up. To relieve our fears about what is

going to happen with this TCE and how it's going to affect our community. That's our main concern and my main concern is the health risk in our neighborhood and what's been happening in the last thirty years, and I would like to know for sure what's going to happen and how this is going to affect the city.

Response:

ADEQ is holding Whirlpool responsible for the clean-up. To most effectively reduce the concentration of contamination in groundwater the main source area on-site will be covered with asphalt and an impermeable coating. This will prevent any TCE remaining in the soil from being transferred to the groundwater. In Situ Chemical Oxidation (ISCO) will be used in the highest concentration areas in order to further reduce contaminant levels. This will prevent contamination from spreading into areas where MNA has degraded the TCE. The selected remedy will allow reuse of the building, which should bring jobs back to the community. No change to the RADD is warranted.

Marsha Brewer

Some of my concerns are the same as before. My biggest concern is my mother; she's lived in the same house on Jacobs Street since she was 29 years old which was 59 years ago. She's had some health issues, we lost my dad a few years ago to a rare neurological disorder that we can't prove or disprove the TCE did or did not cause that. My concern is my mom's health and all the health of the residents in the area. I just want a confirmation from ADEQ that this did not cause any of that.

Response:

ADEQ is not qualified to make medical assessments; however, ADEQ has shared citizen concerns with the Arkansas Department of Health. The Arkansas Department of Health has requested future monitoring data to allow completion of a Health Consultation for this area. This Health Consultation will evaluate health concerns. No change to the RADD is warranted.

Waldrand Phillips

My opinions are the same as what I said earlier. I still do not believe you people and you're just keeping us in a guessing game and you do not know how this is going to work. You're still wasting a lot of money and could compensate everybody for their property going down in value and cleaning the contaminated soil out and putting new soil in.

Response:

Whirlpool is financially responsible for the contamination. ADEQ cannot compensate individual homeowners. The only contaminated soil is located on the Whirlpool property. Cleaning the contaminated soil alone would not adequately address the contaminated groundwater. The remedial options that ADEQ has approved are technologies that have been proven to work across the country as well as here in Arkansas. No change to the RADD is warranted.

Kevin Settle

Kevin Settle, City Director of Ft. Smith – as I said earlier I'm a chemical engineer by trade. I disagree with putting asphalt all over it on the top of the existing area. I think that's the wrong method we should be using. An impermeable solution will eventually rot away and it has to be maintained. If someone forgets to maintain it then we're back in this problem five, ten, twenty years down the road instead of fixing the problem. In Mayflower there was an Exxon spill and yet Exxon stepped up purchased properties, remediating the site as quick as possible yet we're waiting thirty plus years. I think what they're trying to do is wait for the concentration levels to get as low as they can below accepted limits and then things are ok. That to me is the wrong way of doing it, they're just waiting. As I've said before mechanical extraction is the way to go, doesn't matter what the cost is or what it's going to take I think mechanical extraction is truly the way to go to resolve this problem as quick as possible instead of waiting five to ten years. I wish you had taken a trial marked up an area and tried this out. As you've said, hoped and as Whirlpool has said in the last meeting they hope this works. Hope to me is too long. Hydrogeological conditions must be right. We don't know when that is but hope is what's been said twice it works. What happens if this works there should be a plan B already set in place so that in a year or two years from now it's ready to go instead of going back through and trying to have another year or two years discussions. I understand what you can't do with for property values but you can do something about trying to do whatever you can to make the property values whole. You have the power to make this better it's not good at all. To me this is a cheap plan and we the citizens of Fort Smith deserve better. I have some major concerns about the Whirlpool remediation plan; the plan in my mind is weak and does not resolve the problem quickly. The plan does not address the chemical issue the homeowners have been living with for the past thirty years. The plan doesn't address the homeowner's whole with the major decline in property values. The plan doesn't focus on resolving the problem quickly so we can get the commercial property back in use hopefully we can get a new employer in our wonderful city. Whirlpool in my opinion has been focused on more of the low cost the long duration fix which they hope will work. In my opinion I think the city continued to be a problem in our city. ADEQ I know this is on the record. I think ya'll need to take a step back and really think about what you're hearing from the citizens tonight. It's been thirty plus years, the employer abandoned us. They left us said they're going to Mexico, when realistically they went to Mexico in Iowa. I think they left for other reasons; if you really want to you know listen to what they're saying; make sure this is the right decision because we cannot wait another five or ten years. And maybe hopefully this works. We need to get this done quickly the citizens of this area, the citizens of Fort Smith deserve better.

Response:

Maintenance of the asphalt and impermeable cover as well as the rest of the remedy is required by the RADD. The ADEQ required Whirlpool to investigate the potential contamination once we became aware of the problem. The investigation was conducted in phases. Once the data was available, ADEQ required Whirlpool to evaluate and propose a remedy. Mechanical extraction of the groundwater is not viable. Groundwater does not move quickly through the aquifer or along well defined pathways.

Mechanical extraction was attempted in a pilot study. The maximum sustainable pumping rate in the well was 0.5 gallons per minute. Mechanical extraction of the on-site contaminated soil would require removal of site structures which would prevent use of the buildings. The depth of the excavation could be below groundwater. Citizens near the site could be exposed to contamination due to the large volume of contaminated soil and water that would need to be removed. No change to the RADD is warranted.

The RADD does include a plan B. ADEQ is committed to a tight schedule for reaching the remedial goals. Should the evaluation of remedial activities not show significant reduction in contamination, another remedy must be proposed and implemented. The potential remedies are evaluated by specific criteria as noted in Table 1 of the RADD. ADEQ has selected the remedy which will be most effective and efficient and will allow for reuse of the property to benefit the community. Cost is considered, but only after the other criteria. No change to the RADD is warranted.

Pam Webber

Thank you for being here tonight. I wish you had come years ago. The tragic part of this to me and what I've hear tonight from the citizens is their lack of trust in Whirlpool and how this is being handled by you. I'm a city director; I'm not going to argue Science with you tonight. I just want to say on behalf of the citizens who've all sat here tonight, think about them. Have you really listened to them, have you listened to them as much as you have with Whirlpool or had conversations with them like you have with Whirlpool? These are not affluent citizens in this neighborhood, they've worked all of their lives they've saved their money. Probably their biggest investment was their home. What has happened to their home value, many of them are looking at illness and retirement and their future. They have inheritance for their children that has basically been destroyed. I'm also a realtor if you sell a property you're going to fill out a sellers disclosure asking if there's been a chemical problem near your property or on your property. Every one of these property owners is going to check yes. They are not going to be able to sell their property for anywhere near what it's worth or what they paid for it. You say you don't have the power to help with their property, of course you do. You have to do what's right for these property owners, and of the opinion of myself and most of these property owners you have chosen the cheapest route for Whirlpool. Whirlpool is a multimillion dollar corporation that this city was very good to. We need you to be good to our citizens and Whirlpool representatives we need you to do the right thing for our citizens. If they were really going to do the right thing they would go in and buy these properties and make it whole. You know that and I know that. Thank you for coming, you need to come more often and before you make a decision you really need to think about the people in this room who've spoken to you and are living this every day. Thank you

Response:

ADEQ has responded to all comments and concerns brought to our attention. Citizens are encouraged to contact ADEQ electronically, by phone or by mail. Please see response to Comment #9 regarding the health concerns at the site. The recommendation regarding the excavation of the contaminated soil at the site was evaluated in the RADD and it is not practical for the Whirlpool site (see Table 1). The greatest impact has been

identified within the gravelly sand portion approximately 20 to 35 feet below ground surface. The area at the site that would be targeted for removal is located between multiple buildings surrounded by subsurface utilities which limit the technical practicability of an active removal action. ADEQ is requiring Whirlpool to utilize the most efficient remedial option. Cost is the last item considered in any remedy chosen by ADEQ at any site. ADEQ cannot require Whirlpool to purchase properties. ADEQ has required Whirlpool to remediate the contamination for which Whirlpool is responsible. No change to the RADD is warranted.

Comment #11:

Ms. Debbie Keith, resident of Fort Smith near the Whirlpool site, had the following comment:

Can someone explain to me why Whirlpool/Environ uses micrograms per liter to measure the levels of TCE and not the standard EPA measurement of milligrams per liter? Please see page 13 of the proposed RADD. I noticed upon reviewing the different groundwater sampling reports that Environ uses both measurements, therefore confusing the reader.

This conversion is not simple for the average person. A clean and honest report should be consistent with measurements and not jump back and forth requiring conversion. For example: Sep 2002 well 25 have a reading of 157.0 mg/l and now they use ug/l as you can see on the reading of 56,000 ug/l on well 25 for the latest groundwater reading.

Response:

The Environmental Protection Agency does not specify a standard unit exclusively for the measurement of liquids such as groundwater. ADEQ accepts the reported analysis for the groundwater in milligrams per liter (mg/l) as well as micrograms per liter (µg/l). These units can be converted from one to the other. No change to the RADD is warranted.

I was told by Mr. Noel that my groundwater was 10 ft below me. During the latest reading of levels conducted by Environ, I was observing the workers and one of them stated that groundwater was 4.8 ft. below me. We continue to be told that there is no vapor intrusion, co-mingling of surface and groundwater, safe to garden, etc. If the ditch in my yard is 2 1/2 feet deep (stands in water constantly) and the groundwater is only 2 feet below that water....how is it that the storm water runoff is safe to go into the city's water supply?

Response:

The clayey silt present from near the surface to approximately 20 feet below ground surface prevents vapor intrusion. This same clayey silt prevents water on the surface from soaking in and causes water on the surface to runoff into ditches. The groundwater monitoring well on your property extends through the clayey silt into the gravel and sand aquifer at approximately 20 feet below the ground surface. Penetrating into the aquifer causes the water to rise inside the well where it can be measured at 4.8 feet below the ground. The contaminated groundwater is only at this depth inside the well. Storm water in the ditch is separated from the groundwater by approximately 17.5 feet of clayey

silt. The city is responsible for monitoring water entering the storm water system. The public utility is responsible for the public water supply. No change to the RADD is warranted.

The levels have decreased four fold on average over the last two years....this information came from Tamara Knight at the meeting in January. I can't for the life of me imagine what the original levels were in the beginning.

Another point I would like to add is that Whirlpool burned waste from the plant at night in the 90's. I have a maintenance person that will testify to this and upon calling 911 that night, I was told it was a controlled burn. What kind of pollution was our neighborhood exposed to then?

Response:

ADEQ is not aware of these activities and is not able to make a determination based on limited information. No change to the RADD is warranted.

I am still not clear as to why the public was not notified appropriately and in a timely manner when there was discovery of groundwater contamination. For a minimum of ten years, Whirlpool and ADEQ were working on this contamination and Whirlpool waited to leave town to inform us.

Response:

ADEQ published the appropriate Public Notice for hazardous waste activities at the Whirlpool facility when we became aware of these activities. The ADEQ required Whirlpool to investigate the potential contamination once we became aware of the problem. The investigation was conducted in phases. Once the data was available, ADEQ required Whirlpool to evaluate and propose a remedy. No change to the RADD is warranted.

Every time I turn on the TV, computer, open a paper or magazine I get tons of advertisements for Whirlpool. This is obviously not an issue of money and would like our situation to be treated as if it were more important to protect and repair our community than constantly see advertisements. I believe that Dr. Phil or 20/20 would be interested in the length of time spent on cleaning this mess up.

Response:

This comment appears to be directed at Whirlpool. ADEQ can not answer for them. ADEQ will continue to hold Whirlpool responsible for clean up of the site. No change to the RADD is warranted.

My Great Grandfather built my home before Whirlpool came along. As I sit in my home with failing health and plummeting property values, I ask myself does anyone care?

Response:

ADEQ is concerned for the citizens of Arkansas. The Arkansas Department of Health has requested to receive future monitoring data to allow completion of a Health Consultation for this area. This Health Consultation will evaluate health concerns. No change to the RADD is warranted.

Comment #12:

Sarah Jones Winters made a written comment on November 12, 2013 and has stated, "I have a question about our living? Are we going to be safe and healthy? The water has got a smell to it and also the ice.

Response:

Please see response to Comment #9 regarding human health concerns. The smell from the drinking water is not related to the groundwater TCE plume at the Whirlpool site. The drinking water provided to the residences near Whirlpool is being treated by the City of Fort Smith. Any concern related to the drinking water and should be directed to the City of Fort Smith. No change to the RADD is warranted.

The Arkansas Department of Health had the following comments:

Comment #13:

Page 18, Section 10. B. Groundwater: Reference is made to 12 off-site wells being monitored for contaminants of concern (Table 2) and geochemical properties (Table 3). Figure 3 and Figure 5 of the document show these off-site well locations on commercial property (i.e., community housing) and private residential property north of the Whirlpool facility on Ingersol Avenue and Jacobs Avenue. Some of these groundwater monitoring wells have been previously documented as having trichloroethylene (TCE) concentrations detected above 1,000 micrograms per liter (page 4, Section 2). As part of a public health notification, ADH recommends that responsible parties regularly report to each off-site property owner the test results and/or monitoring data from groundwater monitoring wells located on their property.

Response:

ADEQ agrees. The RADD includes a reporting requirement in Section 11 for reporting to the ADEQ, the Fort Smith City Council, and the residents north of the facility. No change to the RADD is warranted.

Comment #14:

Page 19, Section 11. Effectiveness Monitoring Program: Reference is made to off-site soil gas monitoring sites being tested quarterly to monitor for potential vapor intrusion exposure. Figure 6 of the document shows these existing and proposed off-site well locations on commercial property (i.e., community housing) and private residential property north of the Whirlpool facility on Ingersol Avenue and Jacobs Avenue. As part of a public health notification, ADH recommends that responsible parties regularly report

to each off-site property owner the test results and/or monitoring data from soil gas monitoring sites located on their property.

Response:

ADEQ agrees. The RADD includes a reporting requirement in Section 11 for reporting to the ADEQ, the Fort Smith City Council, and the residents north of the facility. No change to the RADD is warranted.

Comment #15:

Page 22, Section 14. Coordination with Other Divisions/Agencies: An External Coordination table states that the Arkansas Department of Health and Human Services was sent a Notice of Decision. Please change this agency name to read "Arkansas Department of Health," as it is no longer merged with the Department of Human Services. In future correspondence of decision notices, please send a copy directly to the ADH Environmental Epidemiology office at the following address to ensure our personnel receive time-sensitive documents by the effective means necessary to conduct a timely review:

Response:

ADEQ agrees. The revision will be made to reflect the agency name change and time-sensitive documents will be forwarded to ADH Environmental Epidemiology office directly in the future.

E. FUTURE ACTIONS

Effective with this Decision, the final Remedial Action Decision Document is incorporated into and becomes a condition of the Consent Administrative Order between Whirlpool Corporation and the Department, as though set forth therein line for line and word for word.

F. DECLARATIONS

ADEQ believes that the remedy set forth in the RADD for the Whirlpool Corporation in Fort Smith, Arkansas is appropriate, technically feasible, reliable, and cost effective. With respect to risk management decisions made by ADEQ, this remedy is deemed acceptable, and to be protective of human health and the environment.


Tammie J. Hynum
Chief
Hazardous Waste Division
Arkansas Department of Environmental Quality

Dec. 27, 2013
(Date)

Enclosure:
Comments
Final RADD



November 18, 2013

Via Hand Delivery

Ms. Tammie J. Hynum
Chief, Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Re: Whirlpool Corporation, Fort Smith, Arkansas
Comments on September 2013, Draft Remedial Action Decision Document
EPA No. ARD042755389 AFIN No. 66-00048

Dear Ms. Hynum:

ENVIRON International Corporation (ENVIRON) on behalf of Whirlpool Corporation (Whirlpool) has prepared this document as a formal written response to the Draft Arkansas Department of Environmental Quality (ADEQ) Draft Remedial Action Decision Document (RADD) dated September 2013 (AFIN: 66-00048) as published in the News Release dated October 14, 2013.

Whirlpool overall supports the remedy set forth in the RADD with recommended changes that we believe strengthen the objectives of treating the site and doing so with appropriate and effective reporting. Whirlpool will be prepared to implement the remedy once the RADD has been finalized. In-Situ Chemical Oxidation (ISCO) treatment has been used to remediate groundwater contamination at sites around the United States and in Arkansas, and Whirlpool concurs that the combination of an asphalt impermeable cover for the on-site source area, ISCO treatment, institutional controls, and monitored natural attenuation will provide a protective remedy.

In keeping with the May 21, 2013 Revised Risk Management Plan (RRMP), June 14, 2013 Revised Risk Management Plan Addendum (hereinafter the Revised Risk Management Plan and Addendum will be collectively referred to as the RRMP), and the July 16, 2013 Draft Final Remedy Work Plan (Work Plan), ENVIRON requests ADEQ consider the following suggested minor modifications to the RADD. Incorporating these comments would clarify certain statements in the RADD. The modifications would also make clear that future required submittals (as approved by ADEQ) would further establish the schedule beyond the milestones set forth in the RADD and would allow for some flexibility on the specifics of remedial timing and implementation based on data and information gathered during design and during pilot implementation, and other considerations such as the possible adoption of institutional controls. This flexibility would allow for minor changes, improvements or modifications to the remedy as new data and information is obtained without having to modify or reissue the RADD.

Whirlpool remains committed to working with ADEQ, as well as the City of Fort Smith and the residents of the area, until this issue has been addressed. Whirlpool looks forward to the finalization of RADD

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following ADEQ's review of the comments submitted during the comment period, and to initiating the remediation activities once approval has been given.

Site History

The Whirlpool Fort Smith site is located at 6400 Jenny Lind Road on the south side of Fort Smith, Arkansas. The site manufactured side-by-side household refrigerators and trash compactors. The property (approximately 153 acres) consists of the main manufacturing building (approximately 1.3 million square feet), separate warehouse and administrative offices, and undeveloped land (approximately 21 acres). Additional buildings located on the north side of the property include a water treatment plant and a boiler house. The majority of the property surrounding the buildings consists of concrete or asphalt service roads and parking areas. Some gravel parking areas are also present.

Whirlpool entered into a Letter of Agreement (LOA) with the Arkansas Department of Environmental Quality (ADEQ), dated July 19, 2002 (ADEQ 2002). Under the LOA, Whirlpool has been following ADEQ program requirements including the United States Environmental Protection Agency's (USEPA's) Corrective Action Strategy, which includes the development of a conceptual site model (CSM), describing environmental conditions at the site. To date, Whirlpool has met the LOA requirements including items required / requested by ADEQ by Items F and G, of the LOA.

All completed investigations, reports, and monitoring events have been used by Whirlpool to create a full understanding of the site background, delineate Constituents of Concern (COCs) in soil and groundwater, evaluate potential exposure pathways for the risk assessment, and propose a corrective measure, all of which are detailed in the RRMP and Work Plan.

The following sections provide Whirlpool's general and detailed comments on the RADD. Each section discusses the general issue along with solutions and corresponding references to specific sections of the RADD.

1 Schedule

Whirlpool agrees with the dates for quarterly, annual and five year reporting, and for recording of deed restriction documentation that are specifically addressed in the RADD. Whirlpool also agrees that the Work Plan will be updated to include the requirements of the RADD, and proposes it should be done within 30 days of the later of the effective date of the RADD or the effective date of an administrative consent order that will accompany or shortly follow the RADD. Further, we feel the schedule set forth in Section 12 of the RADD should be modified to strengthen the overarching objectives of treating the site while being transparent and providing reports on the progress being made.

The schedule in Section 12 of the RADD should contain a specific statement that acknowledges that the Work Plan and subsequent documents will develop a more detailed schedule with project milestones subject to ADEQ approval. Any remaining references throughout the RADD document to specific start

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dates or deadlines based on the effective dates of the Final RADD should be deleted to eliminate the potential for inconsistent deadlines throughout the document and to place all schedule requirements in Section 12. This will allow future schedule modifications through modification and approvals to the Work Plan without reopening the RADD.

Second, the technical review of remedial activities should commence on or after December 31, 2016. As explained further below, providing additional time for this technical review will provide an opportunity for Whirlpool to implement and optimize operation of the ISCO treatment and will allow the oxidant to reach and react with the contaminants of concern (COCs) for a reasonable period of time prior to attempting to evaluate the effectiveness of the ISCO treatment. The work required for the deployment of a successful remedy including ISCO treatment, will begin in the timeframe discussed in the RADD whereby Section 12 of the RADD states that remediation will begin within 60 days after the effective date of the RADD.

Third, as is commonly recognized in such plans, the schedule should contain a specific recognition that events beyond Whirlpool's control may impact any ADEQ approved schedule and that, if such an event occurs, the schedule may be adjusted with ADEQ's consent.

Each of these comments is addressed further below.

1.1 Technical Review Schedule

Clarification of certain specific schedule requirements contained outside Section 12 which create inconsistencies with the schedule in Section 12 are beneficial to all parties. For example, on page 20, the RADD states that "Whirlpool shall begin remediation of the TCE plume within 60 days after the effective date RADD". How this requirement fits with the schedule in Section 12 or would be interpreted is unclear. Whirlpool is actively engaged in efforts necessary and required by ADEQ to assure a robust full scale remedy implementation that will include additional investigations, preliminary design, bench and pilot scale testing, and full scale design before implementation of the full scale remedy. Keeping the referenced statement in the Final RADD requires ADEQ to define "remediation" so Whirlpool can meet ADEQ RADD expectations. The statement could be misinterpreted by the public and create the unintended expectation that ISCO will begin as soon as 60 day, which is not the case, and which would be technically not feasible.

1.2 Start Dates and Performance Milestones

The most significant schedule change proposed that will best address the progress being made on the site within the practical limitations that exist with the plan is related to the technical review of remedial activities proposed by ADEQ in the RADD by December 31, 2015. As outlined in the Work Plan requested by ADEQ and submitted by Whirlpool in July 2013, full scale implementation of the first phase of ISCO will not take place until 2015 resulting in insufficient time to determine the true effectiveness of the remedy. A submittal too early in the evaluation process will likely result in inconclusive data or data trends that have not been substantiated within an appropriate timeframe. Providing an additional year for this technical review will allow for the implementation of the Phase I injection program and sufficient

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monitoring after the implementation to provide data that will aid in assessing the effectiveness of the ISCO treatment and determinations as to whether technical adjustments to the injection program need to be made as the remedy proceeds.

With the various phases of the proposed remedy implementation, Whirlpool requests all implementation dates and performance milestones except those specifically identified in Section 12 be developed, agreed to and enforced through ADEQ approved work plans, work plan updates or addendums. The work plans ADEQ requires in the RADD for review and approval before any work can commence at the site should be the detailed basis for moving forward including determining effectiveness in meeting all schedules and deliverables. A draft schedule was provided in the Work Plan submitted to ADEQ on July 16, 2013. While this schedule will be updated based on Final RADD requirements, it illustrates the framework Whirlpool is requesting ADEQ consider.

Schedule Delays Outside Whirlpool's Control

It should also be noted that delays in schedule outside of Whirlpool's control may affect the schedule outlined in the RADD. For example: local and State permitting delays, work plan approvals, off-site property access issues and adverse weather, etc. are not addressed nor are they afforded a framework for their potential impact to schedule in the RADD. Whirlpool pledges to work diligently in all aspects of implementation, but it is not uncommon for plans of this nature to reflect the realities of issues that might be outside the control of either Whirlpool or ADEQ. Thus, we propose the RADD should be revised to reflect that such delays may be presented to ADEQ and approved by ADEQ, revising the schedule set forth administratively without formally reopening the RADD, which could actually result in further delay.

1.3 Locations to address within the RADD:

- Section 10 – Selected Remedy/Site Plan; C. Placement of Institutional Control
- Section 11 – Effectiveness Monitoring Program
- Section 12 – Schedule

2 Constituents of Concern

The Draft RADD states, "Based upon the historical process, the primary constituent of concern (COC) is TCE. However tetrachloroethene (PCE) and TCE daughter products, including cis-1,2-dichloroethene (cis-1,2-DCE), trans-1,2-dichloroethene (trans-1,2-DCE), 1,1-dichloroethene (1,1-DCE) and vinyl chloride (VC) resulting from the natural degradation of PCE and TCE have also been detected in the groundwater monitoring wells". Other sections of the Draft RADD (listed below) include additional COCs not included in the COCs documented to be present at the site. Moreover, historical site activities do not warrant the inclusion of these additional COCs. Therefore Whirlpool requests ADEQ limit the Remedial Action Levels (RALs) table and COC Table 2 to TCE, PCE cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE and VC as the COCs for the site.

To maintain consistency through the RADD, Table 2 titled Contaminants of Concern should be changed to Constituents of Concern.

2.1 Locations to address within the RADD:

Section 3 – Summary of Site Risks; A. Human Health Risks
Section 8 – Remedial Action levels; C. Groundwater
Table 2 - Contaminants of Concern

3 Off-Site Soils

Certain sections of the RADD do not clearly distinguish between on-site soils and off-site soils when discussing risk. With no known off-site impacts to soil there is no documented risk associated with off-site soil, so any discussion of risks associated with soil should clearly reference only on-site soil, and should make clear that there are no off-site impacted soils.

3.1 Locations to address within the RADD:

Section 3 – Summary of Site Risks; A. Human Health Risks, Off-site Receptors and Exposure Routes
Section 3 – Summary of Site Risks; A. Human Health Risks, Off-site Potential Carcinogenic and Non-Carcinogenic Risks
Section 5 – Summary of Alternatives Considered in Revised Risk Management Plan
Section 11 – Effectiveness Monitoring Program

4 Groundwater Ingestion Pathway

The RADD sets forth a summary of human health risks in Section 3. However it appears the risk associated with off-site groundwater ingestion has been omitted. All other exposure routes are clearly defined in the text with tables documenting the basis for the risk. There is no such discussion or presentation of data to substantiate the risk from off-site groundwater ingestion. There is only a single sentence statement at the very end of this section that states "However, if drinking water wells are installed on-site or off-site, significant potential risks could result from the use of groundwater."

Without the inclusion of the potential risk associated with off-site groundwater, there is no basis for incorporation of any future institutional control into the determination of future potential risk. Therefore, Whirlpool requests ADEQ acknowledge and include the current and future groundwater exposure risks and acknowledge that risk-based RALs can be applied to on-site and off-site groundwater until appropriate, enforceable institutional controls have been recorded to the satisfaction of ADEQ.

Finally, on page 4, the RADD accurately states that the depth to groundwater is routinely observed during the construction of monitoring wells to be 15 to 25 feet below ground surface but also notes that the measured depth in completed wells may be less in the northeast portion of the off-site area. Because the measured depth in these particular wells may be related to confined aquifer conditions leading to artesian conditions impacting the measured depth to water within the monitoring well, this

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statement in the RADD does not impact the selected remedy and measured depth in the monitoring wells may not reflect actual groundwater depth. For these reasons, this statement should be deleted from the RADD.

4.1 Locations to address within the RADD:

Section 3 – Summary of Site Risks; A. Human Health Risks, Off-site Potential Carcinogenic and Non-Carcinogenic Risks

Section 3 – Summary of Site Risks; A. Human Health Risks, Off-site Receptors and Exposure Routes

Section 8 – Remedial Action Levels; C. Groundwater

5 Effectiveness of Remedy

Timely and appropriate determination of effectiveness of the remedy is critically important. The effectiveness determinations will be used to evaluate whether the selected remedial actions are achieving the desired goals and determining interim and final success or failure. Whirlpool is committed to implementing a successful project; therefore the methods and criteria used to evaluate the project should be clearly defined. Whirlpool requests ADEQ use the work plan document(s) to clearly define interim and final goals rather than the Final RADD.

On-site, institutional controls in conjunction with an asphalt surface and impervious coating will be used to address surface soil impacts and mitigate risks associated with exposure to on-site soils. The effectiveness of a remedial measure off-site may also be evaluated on a risk based method. As the remedy implementation process moves forward, circumstances may change resulting in changes to risks associated with off-site receptors, so it is important to allow flexibility in the path chosen to reach the site endpoint. Therefore the RADD should be amended to make clear that a no further action document may be obtained either through (a) the achievement of RALs for the relevant COCs by a combination of ISCO treatment, institutional controls and monitored natural attenuation or (b) a site specific analysis demonstrating that risk associated with all potential pathways has been reduced to acceptable regulatory levels based on a combination of ISCO treatment, institutional controls, and monitored natural attenuation.

5.1 Locations to address Effectiveness within the RADD:

Section 6 – Proposed/Recommended Remedies; B. Groundwater

Section 8 – Remedial Action Levels; C. Groundwater

Section 9 – Justifications for Selections; B. Groundwater

Section 10 – Selected Remedy/Site Plan; A. Surface and Subsurface Soils

Section 11 – Effectiveness Monitoring Program

November 18, 2013

6 Institutional Controls

There are multiple points in the RADD requiring institutional controls that incorporate specific language concerning the control of future on-site exposures. An example is in Section 9 Justification for Selections, A. Subsurface Soils "This remedy will be coupled with an institutional control to prevent excavation of the on-site impacted soils." This sentence implies that excavation of on-site soil should never be allowed. The RADD should state that proposed remedies will be coupled with an institutional control to prevent *unauthorized* excavation of the on-site impacted soils. The intent of on-site institutional controls is not to prohibit the excavation of on-site soils, but to require that such activities be conducted in accordance with approved site specific risk management plans that will facilitate the full redevelopment of the site.

In Section 10 under "Selected Remedy/Site Plan, C. Placement of Institutional Control", it states in the second paragraph: "Within sixty (60) days of the effective date of this RADD, the Facility must provide documentation of a deed restriction for the Facility." This requirement should be revised to make clear that Whirlpool will submit a draft restrictive covenant prior to recording to allow for ADEQ comment.

6.1 Locations to Institutional Controls within the RADD:

Section 6 – Proposed/Recommended Remedies, A. Subsurface Soils

Section 9 – Justification For Selections, A. Subsurface Soils

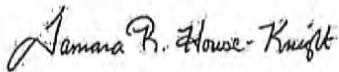
Section 9 – Justification For Selections, B. Groundwater

Section 10 - Selected Remedy Site Plan, C. Placement of Institutional Control.

As we have stated previously, overall Whirlpool is in agreement with the RADD, and remains committed to working with ADEQ, as well as the City of Fort Smith and the residents of the area, until this issue has been addressed. Whirlpool looks forward to initiating the remediation activities once approval has been given.

If ADEQ has any questions or requires clarification to the comments contained in this correspondence please contact me.

Sincerely,



Tamara House-Knight, PhD
Project Manager / Toxicologist

cc: Robert Karwowski – Whirlpool Corporation

ADEQ

ARKANSAS
Department of Environmental Quality

Hand Delivered Mail Receipt

Date	11/18/13
Division	HW
Sender	TAMARA HOUSE-KNIGHT
Received By	MOSTAFA MEHRAN

Carolyn Nichols

I have just lost my husband in July.

The stress of the TCE situation hurt his health and mental and emotional health.

My emotional and mental health has caused me to start using anti-depressants. We love our home and would like to know what our homes are not going to kill us because of Whistler's TCE.

1601 Jacobs
St. Smith, Ark. 72408



1605 Jacobs

1601 Jacobs

Next door To

ONE ANOTHER

Spring 2013



Mehran, Mostafa

From: Debbie Keith <debbieand4@hotmail.com>
Sent: Monday, November 04, 2013 6:28 PM
To: Mehran, Mostafa
Cc: bbowcock@irmwater.com; Mike Lorenz; Pam Weber; wally bailey; Jeff Noel; gosack@fortsmithar.gov; Jesse Keith; Rich, Jay; David Hughes; erin@brockovich.com; Jerome Flusche; T David Potts; Neal Morrison; kevinsettle6@aol.com; mayor@fortsmithar.gov; good4ward2@gmail.com; keithlauward1@gmail.com; georgecatsavis@gmail.com; philip_merry@ajg.com
Subject: Whirlpool's Math

To Whom It May Concern:

Can someone explain to me why Whirlpool/Environ use micrograms per liter to measure the levels of TCE and not the standard EPA measurement of milligrams per liter? Please see page 13 of the proposed RADD. I noticed upon reviewing the different groundwater sampling reports that Environ uses both measurements, therefore confusing the reader. This conversion is not simple for the average person. A clean and honest report should be consistent with measurements and not jump back and forth requiring conversion. For example: Sep 2002 well 25 has a reading of 157.0 mg/l and now they use ug/l as you can see on the reading of 56,000 ug/l on well 25 for the latest groundwater reading.

I was told by Mr. Noel that my groundwater was 10 ft below me. During the latest reading of levels conducted by Environ, I was observing the workers and one of them stated that groundwater was 4.8 ft. below me. We continue to be told that there is no vapor intrusion, co-mingling of surface and groundwater, safe to garden, etc. If the ditch in my yard is 2 1/2 feet deep (stands in water constantly) and the groundwater is only 2 feet below that water....how is it that the storm water run off is safe to go into the city's water supply?

The levels have decreased four fold on average over the last two years....this information came from Tamara Knight at the meeting in January. I can't for the life of me imagine what the original levels were in the beginning.

Another point I would like to add is that Whirlpool burned waste from the plant at night in the 90's. I have a maintenance person that will testify to this and upon calling 911 that night, I was told it was a controlled burn. What kind of pollution was our neighborhood exposed to then?

I am still not clear as to why the public was not notified appropriately and in a timely manner when there was discovery of groundwater contamination. For a minimum of ten years, Whirlpool and ADEQ were working on this contamination and Whirlpool waited to leave town to inform us.

Every time I turn on the t.v., computer, open a paper or magazine I get tons of advertisements for Whirlpool. This is obviously not an issue of money and would like our situation to be treated as if it were more important to protect and repair our community than constantly see advertisements. I believe that Dr. Phil or 20/20 would be interested in the length of time spent on cleaning this mess up.

My Great Grandfather built my home before Whirlpool came along. As I sit in my home with failing health and plummeting property values, I ask myself does anyone care?

Sincerely,

Debra E. Keith

Mance Fowler

I think I basically said all I want to say about it. What type of remark are you wanting? What are you wanting to know how I feel about this. I think that just about everybody here believes that ADEQ hasn't really done what we expected them to do. We expected you to go in and make Whirlpool clean all of this up. To relieve our fears about what is going to happen with this TCE and how it's going to affect our community. That's our main concern and my main concern is the health risk in our neighborhood and what's been happening in the last thirty years, and I would like to know for sure what's going to happen and how this is going to affect the city.

Marsha Brewer

Some of my concerns are the same as before. My biggest concern is my mother; she's lived in the same house on Jacobs Street since she was 29 years old which was 59 years ago. She's had some health issues, we lost my dad a few years ago to a rare neurological disorder that we can't prove or disprove the TCE did or did not cause that. My concern is my mom's health and all the health of the residents in the area. I just want a confirmation from ADEQ that this did not cause any of that.

Waltrand Phillips

My opinions are the same as what I said earlier. I still do not believe you people and you're just keeping us in a guessing game and you do not know how this is going to work. You're still wasting a lot of money and could compensate everybody for their property going down in value and cleaning the contaminated soil out and putting new soil in.

Kevin Settle

Kevin Settle, City Director of Ft. Smith – as I said earlier I'm a chemical engineer by trade. I disagree with putting asphalt all over it on the top of the existing area. I think that's the wrong method we should be using. An impermeable solution will eventually rot away and it has to be maintained. If someone forgets to maintain it then we're back in this problem five, ten, twenty years down the road instead of fixing the problem. In Mayflower there was an Exxon spill and yet Exxon stepped up purchased properties, remediating the site as quick as possible yet were waiting thirty plus years. I think what they're trying to do is wait for the concentration levels to get as low as they can below accepted limits and then things are ok. That to me is the wrong way of doing it, they're just waiting. As I've said before mechanical extraction is the way to go, doesn't matter what the cost is or what it's going to take. I think mechanical extraction is truly the way to go to resolve this problem as quick as possible instead of waiting five to ten years. I wish you had taken a trial marked up an area and tried this out. As you've said, hoped and as Whirlpool has said in the last meeting they hope this works. Hope to me is too long. Hydrogeological

conditions must be right. We don't know when that is but hope is what's been said twice it works. What happens if this works there should be a plan B already set in place so that in a year or two years from now its ready to go instead of going back through and trying to have another year or two years discussions. I understand what you can't do with for property values but you can do something about trying to do whatever you can to make the property values whole. You have the power to make this better it's not good at all. To me this is a cheap plan and we the citizens of Fort Smith deserve better. I have some major concerns about the Whirlpool remediation plan; the plan in my mind is weak and does not resolve the problem quickly. The plan does not address the chemical issue the homeowners have been living with for the past thirty years. The plan doesn't address the homeowner's whole with the major decline in property values. The plan doesn't focus on resolving the problem quickly so we can get the commercial property back in use hopefully we can get a new employer in our wonderful city. Whirlpool in my opinion has been focused on more of the low cost the long duration fix which they hope will work. In my opinion I think the city continued to be a problem in our city. ADEQ I know this is on the record. I think ya'll need to take a step back and really think about what you're hearing from the citizens tonight. It's been thirty plus years, the employer abandoned us. They left us said they're going to Mexico, when realistically they went to Mexico in Iowa. I think they left for other reasons; if you really want to you know listen to what they're saying; make sure this is the right decision because we cannot wait another five or ten years. And maybe hopefully this works. We need to get this done quickly the citizens of this area, the citizens of Fort Smith deserve better.

Pam Webber

Thank you for being here tonight. I wish you had come years ago. The tragic part of this to me and what I've hear tonight from the citizens is their lack of trust in Whirlpool and how this is being handled by you. I'm a city director, I'm not going to argue Science with you tonight. I just want to say on behalf of the citizens who've all sat here tonight, think about them. Have you really listened to them, have you listened to them as much as you have with Whirlpool or had conversations with them like you have with Whirlpool? These are not affluent citizens in this neighborhood, they've worked all of their lives they've saved their money. Probably their biggest investment was their home. What has happened to their home value, many of them are looking at illness and retirement and their future. They have inheritance for their children that has basically been destroyed. I'm also a realtor if you sell a property you're going to fill out a sellers disclosure asking if there's been a chemical problem near your property or on your property. Every one of these property owners is going to check yes. They are not going to be able to sell their property for anywhere near what it's worth or what they paid for it. You say you don't have the power to help with their property, of course you do. You have to do what's right for these property owners, and of the opinion of myself and most of these property owners you have chosen the cheapest route for Whirlpool. Whirlpool is a multimillion dollar corporation that this city was very good to. We need you to be good to our citizens and Whirlpool representatives we need you to do the right thing for our citizens. If they were really going to do the right thing they would go in and buy these properties and make it whole. You know that and I know that. Thank you for coming, you need to come more often and

before you make a decision you really need to think about the people in this room who've spoken to you and are living this every day. Thank you

Neal Morrison 4000 Blue Hole Road Rudy, Arkansas 72952

November 18, 2013

Tammie Hynum
Hazardous Waste Division Chief
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Re: *Whirlpool Remedial Action Decision Document*
Fort Smith, Arkansas

Dear Ms. Hynum,

My sister and I own the house at 1409 Jacobs in Fort Smith. It belonged to our parents and is where we grew up. We inherited it from our mother who passed away in July of 2011.

We listed the house for sale in June of 2012, but we had to take it off the market last January after learning that the ground and groundwater is contaminated by a plume of TCE. In six months of listing it, we never got any legitimate interest due to a very slow market for this type of real estate. If and when we relist the house, we will now be obliged to answer "yes" to five of the questions on the Seller Property Disclosure due to the existence of a carcinogenic substance in the ground. The aforementioned slow market combined with contaminated soil will make it impossible to sell the house for anything near what it was worth.

Last February 4th, I e-mailed Whirlpool's attorney, Robert L. Jones, a request for Whirlpool to purchase our property for its 2012 appraised value of \$73,000. I made this offer under the theory that Whirlpool could resell it and absorb the loss due to the contamination that they caused. That offer was rejected by Mr. Jones on February 8, 2013. The next logical step was to file suit against Whirlpool with the hope of being made whole.

The reason for this letter is not to complain that we have been thrust into a legal action as that will resolve itself in the judicial system. My complaint is related to the way Whirlpool has been handling this problem for the last 30 or so years. After the original spill, they did nothing to contain it and the TCE plume spread into our neighborhood. They continued to do nothing until 2002 when they finally reported to ADEQ. Over the next 10 years, they monitored the groundwater, continuing to do nothing to attenuate the spread of the plume. Curiously, they put off doing something until after they moved their operation to Mexico.

The existence of the contamination was not made public until a neighborhood meeting on January 10, 2013. Since that meeting, the property owners and others have all been placed in suspense by Whirlpool while they engage in an iterative process to find the absolute minimum amount of effort (money) it will take to get out of this mess. The original Remedial Action Plan set the bar extremely low and they have been inching it up with revised plans to find this absolute minimum.

- In the Revised Risk Management Plan (RRMP) dated November 30, 2012, the selected alternative was "onsite and offsite institutional controls". Instead of approaching the property owners to negotiate a deed restriction to obtain these controls, Whirlpool tried to get the City of Fort Smith to enact a blanket ordinance banning the drilling of drinking water wells (a practice that is nonexistent in this area). In other words, they tried to placate ADEQ by Tom Sawyering their responsibility onto the City to prohibit that which will never happen. Had the City not required them to notify the neighborhood in writing and conduct a public meeting, they might have gotten away with it.
- So, they had to raise the bar. In the next RRMP dated April 8, the selected alternative was institutional controls, on-site chemical oxidation and letting the offsite soils go through "monitored natural attenuation" (MNA). Under this plan, they again prohibit that which will never happen, take care of the problem on their property and let the neighborhood wait while the TCE goes away naturally over many decades (nevermind the even nastier by products of natural attenuation).
- Again, they had to raise the bar. The April 24 RRMP expanded the scope of the on-site chemical oxidation, and, again, the residents get to wait for MNA to happen.
- With the May 21 RRMP, Whirlpool finally raised the bar enough to satisfy ADEQ. This plan includes an impermeable cap on the source contamination area, onsite and offsite chemical oxidation and institutional controls in the form of deed restrictions. Now, they are required to deal with the property owners face-to-face instead of hiding behind the City.

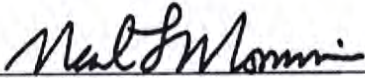
While the rest of the world waited, Whirlpool found that absolute minimum level of effort necessary to get out of town. During this time, the residents stressed out, ADEQ wasted valuable time and resources reviewing slipshod RRMP's and every week there is a new article in the paper about what a big mess this is. I don't know if the final plan will work, but it is much better than the original "do nothing" plan. The circuitous and time consuming route Whirlpool has dragged everyone through to get to this point is shameful, and it will continue on for many more years.

Tammie Hynum
November 18, 2013
Page 3

Jeff Noel, the vice president of communications and public affairs at Whirlpool, said in a meeting I attended that Whirlpool wants to be a "good neighbor" and a "good corporate citizen," which is not true. A good neighbor does not pollute the property next door and try to get away 30 years later without squaring up. A good citizen does not remove the livelihood of thousands of fellow citizens to a foreign country only to increase profit. Whirlpool is neither a neighbor of mine nor a citizen of my community. Unfortunately, they are a stereotypical big corporation that cares for nothing but their perceived image and their stock price.

Thank you for the opportunity to submit my comments.

Sincerely,

A handwritten signature in cursive script, appearing to read "Neal Morrison", written over a horizontal line.

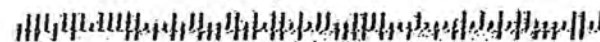
Neal Morrison

Neal Morrison
4000 Blue Hole Road
Rudy, AR 72956



Tammie Hynum
Hazardous Waste Division Chief
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

721185317



TO Whom it may concern:

Whirlpool Corp. should
erase all traces of any + all
pollution to soil + water;

Responsibility is their duty at
any cost.

Also they need to compensate
any + all health problems
to any + all residents + or
workers.

Signed Russell Grettum

Russell Grettum

1605 Jacobs

1601 Jacobs

Next door
to one
another

Spring 2013

PLEASE PRINT LEGIBLY

Public Comment Registration Card (8)

Date 11/12/13 Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)Hearing Location Fort SmithName Kevin SettleAddress 10904 Cork LaneCity Fort Smith State AR Zip Code 72908E-mail Address KevinSettle6@aol.com
ADEQ
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card

Date 11-12-2013 Verbal Comment ☒ Written Comment ☒
Speaker # (Attached or back of card)

Hearing Location _____

Name Russ GRETTONAddress 6515 So "R" STREETCity Fort Smith State AR Zip Code 72903E-mail Address gymmybtrkr@hotmail.com
ADEQ
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card

Date 11-12-2013 Verbal Comment ☐ Written Comment ☒
Speaker # (Attached or back of card)Hearing Location COMMENT →Name Sarah Jane WintersAddress 1705 Jacobs AveCity Fort Smith State ARK Zip Code 72908E-mail Address _____
ADEQ
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (9)

Date 11-12-13 Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Sam WeberAddress 3001 Cliff DrCity Fort Smith State AR Zip Code 72901E-mail Address weber5469a@aol.com
ADEQ
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

I have a ? about our
living and are we going to be
safe and health and also
the water is got a smell to
it and also the ice.

Public Comment Registration Card (2)

Date 11-12-13

Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location SENIOR CITIZENS CENTER

Name MANCE W. FOWLER

Address 1504 JACOBS

City FT. SMITH State AR Zip Code 72908

E-mail Address _____

ADEQ

ARKANSAS
Department of Environmental Quality
www.adeq.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card

Date 11-12-13

Verbal Comment ☐ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location (withdrew)

Name RAYMOND NELSON

Address 2100 W. 31st

City FORT SMITH State AR Zip Code 72904

E-mail Address bnelson55@gmail.com

ADEQ

ARKANSAS
Department of Environmental Quality
www.adeq.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (3)

Date 11-12-13

Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Rose M. Toke

Address 1801 S. 46 St

City FT. Smith State AR Zip Code 72903

E-mail Address tharyrose@att.net
NOT HERE

ADEQ

ARKANSAS
Department of Environmental Quality
www.adeq.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (1)

Date _____

Verbal Comment ☐ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Jayce Mullis

Address 3905 MARSHALL DR

City FT Smith State AR Zip Code 72904

E-mail Address _____
NOT HERE

ADEQ

ARKANSAS
Department of Environmental Quality
www.adeq.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (6)

Date 11-12-13Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Clinton BashamAddress 19 College RdCity Huntington State AR Zip Code 72940E-mail Address c-bash@hotmail.com
(not here)**ADEQ**
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (4)

Date 11/12-2013Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)Hearing Location FSMName RONN ROGERS PRESIDENT SAVE OUR STREAMSAddress 27501 Hwy 45 SOCity Midland State AR Zip Code 72945E-mail Address _____
NOT HERE**ADEQ**
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (7)

Date 11-12-13Verbal Comment ☒ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Walter PhillipsAddress 2726 Tulsa #4City Fort Smith State AR Zip Code 72901

E-mail Address _____

ADEQ
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY

Public Comment Registration Card (5)

Date 11-12-13Verbal Comment ☐ Written Comment ☐
Speaker # (Attached or back of card)

Hearing Location _____

Name Marsha BrewerAddress 1701 Villa CourtCity Corinth State TX Zip Code 76210E-mail Address mbrewer17@yahoo.com**ADEQ**
ARKANSAS
Department of Environmental Quality
www.adeg.state.ar.us

PLEASE PRINT LEGIBLY



Arkansas Department of Health

4815 West Markham Street • Little Rock, Arkansas 72205-3867 • Telephone (501) 661-2000

Governor Mike Beebe

Nathaniel Smith, MD, MPH, Director and State Health Officer

November 14, 2013

Ms. Tammie J. Hynum
Chief, Hazardous Waste Division
Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

Dear Ms. Hynum:

The Arkansas Department of Health (ADH) Environmental Epidemiology Section has reviewed the Draft Remedial Action Decision Document (RADDD) for Correction Action regarding the Whirlpool Corporation Facility in Fort Smith, Sebastian County, Arkansas (ID#: 66-00048). ADH submits the following comments to this draft document under the public comment period ending November 18, 2013.

1. Page 18, Section 10. B. Groundwater: Reference is made to 12 off-site wells being monitored for contaminants of concern (Table 2) and geochemical properties (Table 3). Figure 3 and Figure 5 of the document show these off-site well locations on commercial property (*i.e.*, community housing) and private residential property north of the Whirlpool facility on Ingersol Avenue and Jacobs Avenue. Some of these groundwater monitoring wells have been previously documented as having trichloroethylene (TCE) concentrations detected above 1,000 micrograms per liter (page 4, Section 2). As part of a public health notification, ADH recommends that responsible parties regularly report to each off-site property owner the test results and/or monitoring data from groundwater monitoring wells located on their property.
2. Page 19, Section 11. Effectiveness Monitoring Program: Reference is made to off-site soil gas monitoring sites being tested quarterly to monitor for potential vapor intrusion exposure. Figure 6 of the document shows these existing and proposed off-site well locations on commercial property (*i.e.*, community housing) and private residential property north of the Whirlpool facility on Ingersol Avenue and Jacobs Avenue. As part of a public health notification, ADH recommends that

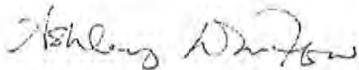
responsible parties regularly report to each off-site property owner the test results and/or monitoring data from soil gas monitoring sites located on their property.

3. Page 22, Section 14. Coordination with Other Divisions/Agencies: An External Coordination table states that the Arkansas Department of Health and Human Services was sent a Notice of Decision. Please change this agency name to read "Arkansas Department of Health," as it is no longer merged with the Department of Human Services. In future correspondence of decision notices, please send a copy directly to the ADH Environmental Epidemiology office at the following address to ensure our personnel receive time-sensitive documents by the effective means necessary to conduct a timely review:

Arkansas Department of Health
Environmental Epidemiology, Slot 32
4815 West Markham Street
Little Rock, AR 72205

Please do not hesitate to contact our office if there are any questions regarding these comments on the Whirlpool Draft RADD. I can be reached by phone at 501-280-4041 or by email at ashley.whitlow@arkansas.gov.

Sincerely,



Ashley Whitlow, M.S., CPM
Epidemiologist /ATSDR Cooperative Agreement Health Assessor

cc: Shirley Louie, M.S., CIH, Applied Epidemiology Branch Chief, ADH
Lori Simmons, M.S., Environmental Epidemiology Section Chief/ATSDR Program Coordinator, ADH
Carrie Poston, MPH, MCHES, Epidemiologist, ADH



ARKANSAS
Department of Environmental Quality

HAZARDOUS WASTE DIVISION ROUTING SLIP

12/10/13

Subject: Whirlpool Final RADD

From: Annette Cusher *AC*

<u>Route in turn to:</u>	<u>Action Needed</u>	<u>Initials</u>	<u>Date</u>
Dianna Kilburn	☒ Concurrence ☐ Review	<i>DK</i>	<i>12/10/13</i>
Doug Ritchie	☒ Concurrence ☒ Review	<i>DR</i>	<i>12/11/2013</i>
Jay Rich	☒ Concurrence ☐ Review	<i>JR</i>	<i>12-11-13</i>
Tammie Hynum	☒ Concurrence ☐ Review/Sign	<i>TH</i>	<i>12/16/13</i> <i>comm 12/13/13</i>
Ryan Benefield	☒ Concurrence ☒ Review	<i>RB</i>	<i>12/18/13</i>

***Note:** Marking the Concurrence box indicates the individual agrees with the applicable text as it relates to their individual discipline and Work Section (e.g., Engineer; Risk Assessor; Geology; Compliance; Policy/Management), as applicable. Marking the Review box indicates the individual has read the document.

DISPOSITION:

Return to Annette Cusher

COMMENTS: *[Insert a brief description of the contents being routed]*