



REMEDIAL ACTION UPDATE FACT SHEET

BENFIELD INDUSTRIES

SUPERFUND SITE

Waynesville, Haywood County, North Carolina

DECEMBER 2013

This fact sheet is not to be considered a technical document but has been prepared to provide the general public with a better understanding of activities that have been occurring at the Site. For technical information, please review documents in the Information Repository.

INTRODUCTION

This Fact Sheet has two primary goals: first, to summarize the findings of the Third Five-Year Review Report for the Benfield Industries Site and secondly, to provide an update as to current/future activities at the Site. The Third Five-Year Review Report for Benfield Site is dated September 12, 2013.

The purpose of a Five-Year Review is to evaluate the remedy implemented at a Superfund Site and to determine if the cleanup action remains protective of public health and the environment. More specifically:

- to confirm that the specified remedies remain effective at protecting human health and the environment (i.e., the remedy is operating and functioning as designed) and
- to evaluate whether the cleanup levels for the contaminants in the soil, surface water, sediment, and groundwater specified in the respective Record of Decisions (RODs) remain protective of human health and the environment.

The Third Five-Year Review was performed by the North Carolina Department of Environment and Natural Resources (NCDENR) with the assistance of the U.S. Environmental Protection Agency (EPA).

A copy of all three Five-Year Review Reports can be found at the Town of Waynesville City Hall, 16 South Main Street, Waynesville, Haywood County, North Carolina, at EPA's Region 4 Information Center at 61 Forsyth Street, Sam Nunn Atlanta Federal Center, Atlanta, Georgia 30303, or at the following website: <http://www.epa.gov/superfund/sites/fiveyear>.

SITE HISTORY/BACKGROUND

The Benfield Site is located in Waynesville, North

Carolina, and occupies approximately 3.5 acres of a six-acre parcel along Riverbend Street. The Site is bounded to the north by commercial properties, to the east by Riverbend Street, which represents a divide between a predominantly residential area to the east and an industrial/commercial area to the west, including the Benfield property.

Ever since 1904, the Site has been used for industrial/manufacturing purposes. The Site was owned and operated by Unagusta Furniture Company, which manufactured wooded bed frames. Waynewood, Inc. also operated the Site during this time. Waynewood was a sewing operation, which made mattresses for the bed frames built by Unagusta. In April 1961, Guardian Investment Company purchased the property and continued the same manufacturing operations as Unagusta/Waynewood. These operations ended in 1975.

Benfield Industries Inc. began operating at the Site in 1976 mixing and packaging bulk chemicals for resale. Liquid products were packaged in one-pint to five-gallon containers and solid products were packaged in 8 to 100-pound bags or containers for resale. The facility included two storage buildings, a brickwork building with a concrete working area, and a packaging building. Approximately ten aboveground storage tanks (varying in capacity from 1,000 to 10,000 gallons) were located on the property. Spills were reported to have occurred in the vicinity of these tanks. Contents of these tanks included: lacquer, paint thinner, de-natured alcohol, acetone, xylenes, toluene, and unused oil.

Benfield operated until a fire destroyed the facility. In April 1982, a series of explosions started a fire that eventually destroyed most of the facility and resulted in the permanent closing of the plant.

From 1982 to 2004, the property sat vacant. In 2002 Haywood Vocational Opportunities, Inc. (HVO) purchased the 6-acre parcel and in 2004 this parcel was

redeveloped. Redevelopment of the property by HVO included trucking in sufficient clean soil to raise the elevation of the property between 2 – 4 feet. Four of the 6 acres were developed. Approximately 1.5 acres were used for two buildings, 2.5 acres were used for parking, and the remaining 2 acres as green space. The green space does not contain any fill material. There is one storm water retention pond on the west side of the property that collects rain water from the roofs of the industrial buildings and the drainage from the parking area. Browning Branch, a creek, runs from south to north on the western boundary of the Site.

SELECTED REMEDY

The ROD was signed in July 1992 and in June 1995, a ROD Amendment was issued. The issuance of the ROD Amendment was warranted based on the information/data developed during the remedial design (RD) and associated treatability studies. The ROD Amendment modified both the soil and groundwater remediation alternatives to be implemented at the Site. In November 2001, an Explanation of Significant Difference (ESD) was signed. The ESD provided restrictive covenant language (i.e., Institutional Controls) for the Site along with providing instructions as to what would happen to treated soil that did not meet the cleanup levels specified in the ROD/ROD Amendment. The goal of the restrictive covenant language was to restrict/control the future development/use of this property. Institutional controls are defined as non-engineering actions and/or instruments, such as administrative and/or legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of a remedy by limiting land and/or resource use (e.g., easement, a fish advisory, local permit, land use restrictions).

The overall objective of the selected remedial action (RA) was to eliminate future risks at this Site by removing the threat posed by contaminated groundwater and remediate residual soil contamination. Remediation of the residual soil contamination will prevent this residual contamination from adversely impacting groundwater as well as decrease the future risk associated with Site soils.

The RA, which was funded through Superfund, began in November 1997 and occurred in two phases. The first phase of the RA focused on the contaminated soil and the second phase focused on the contaminated groundwater. The first phase included the following activities: construction of an on-site Land Treatment Unit (LTU); excavation and sizing of contaminated soils; air

monitoring; land farming the contaminated soils in the LTU in windrows; cleaning the removed cobble, backfilling the cleaned cobble and treated soils back into the excavations; dismantling the LTU following treatment of all soils; and grading, resurveying and reseeding the Site. During construction of the LTU, soils in two areas of the Site were found to contain levels of pentachlorophenol above the ROD cleanup level. Since pentachlorophenol does not readily degrade, approximately 5,230 cubic yards of pentachlorophenol contaminated soil was excavated and disposed of at an off-site landfill.

In addition to the construction of the LTU, two above-ground 50,000-gallon temporary holding/settling ponds were constructed on the northern end of the Site. Water from both the LTU and excavation dewatering efforts were pumped to these two holding ponds. After allowing some time for settling, the contents of these ponds were periodically discharged to the Waynesville's sewer system.

Construction of the LTU in the southern portion of the Site began in late fall of 1997 with the excavation of contaminated soils beginning in the spring of 1998. The RD anticipated excavating 18,000 cubic yards of contaminated soil. Treatment of soils was terminated in September 2000 and the soils/cobble were backfilled into the excavations. A total of 28,400 cubic yards of contaminated soil was excavated and 23,170 cubic yards of this soil were treated in the LTU. During the fall of 2000, the LTU was dismantled and the Site was graded and hydroseeded. During soil excavation, air monitoring was performed to ensure that no unacceptable releases of airborne contaminants occurred. The results from all air monitoring efforts indicated that no unacceptable releases occurred.

During excavation efforts, two unknown underground storage tanks were uncovered in the northwest corner of the Site. One tank had a 500-gallon capacity and the other had a 1000-gallon capacity. The tanks had numerous pit holes and contained predominantly groundwater. Sampling indicated the presence of benzene, toluene, ethylbenzene, and xylene. In all likelihood these tanks had contained fuel products, although this is not indicated in the records. The tanks were removed, cut-up, and disposed of off-site.

Prior to replacing the soils back into the excavations, EPA evaluated whether or not the remaining levels of contaminants in the treated soil would adversely impact the underlying groundwater as precipitation percolates

through the ground. EPA conducted toxicity characteristic leachate procedure (TCLP) analyses on numerous samples of treated soils. All TCLP results showed that the remaining levels of contaminants in the treated soils would not adversely impact the quality of the underlying groundwater.

To eliminate the unacceptable risk from direct contact, all the treated soils with levels of benzo(a)pyrene above the 300 µg/kg (approximately 500 cubic yards) were buried with a minimum of 1 foot of clean soil placed on top. As both EPA and NCDENR wanted this property to be reused in the future, the restrictive covenant language was placed on the property to protect human health from any unnecessary exposures. This limitation dovetailed with the Haywood County zoning for the property as this property lies within the 100-year flood zone of Browning Branch. These 500 cubic yards of soil are now covered by the drive way of the HVO loading dock.

The following activities were associated with the second phase of the RA: install two on-site extraction wells; install equalization tank and the necessary piping; install control system; connect the equalization tank to the sewer system; and install additional monitoring wells and piezometers.

Construction of the groundwater extraction system began in February 2001 and was completed in April 2001. The system consisted of two extraction wells (EXT02 and EXT03) with the extracted groundwater being discharged directly to the Town of Waynesville sewer system. As of December 2006, over 22 million gallons of groundwater had been extracted and discharged to the sewer system. The extraction system was shut down on June 1, 2007 and has not been restarted. The primary reason the extraction system was not restarted was because one of the conclusions specified in the September 2007 Streamline Remediation System Evaluation (RSE-Lite) Report stated that the groundwater extraction system at the Site was no longer an effective groundwater remedy.

Groundwater monitoring has been conducted at the Site since 2001 to evaluate the progress of the groundwater remediation. Groundwater monitoring events were performed at the Site quarterly for the first two years of system operation (May 2001 - April 2003), semi-annually for the third and fourth years of operation (May 2003 - April 2005), and annually in 2006 and 2007. Additional groundwater monitoring events were also performed after the extraction system shutdown, in February 2008, in May 2009, in May 2012 and in June 2013.

CURRENT STATUS

Since the shutdown of the groundwater extraction system, limited O&M activities have occurred at the Site. Until recently, the only costs incurred were associated with sampling groundwater. The cost for each groundwater sampling event was between \$30,000 and \$40,000 and this work was completed by the EPA.

Between February 2010 and July 2011, EPA conducted/completed a monitored natural attenuation (MNA) evaluation. MNA is defined as natural processes that are occurring which include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in the environment. These in-situ processes include biodegradation; dispersion; dilution; sorption; volatilization; and chemical or biological stabilization, transformation, or destruction of contaminants. This effort included collecting four separate rounds of groundwater samples from monitoring wells at the Site. These sampling events occurred in February 2010, September 2010, December 2010, and March 2011. The 2011 MNA report evaluating the analytical results for these groundwater sampling events identified elevated levels of polycyclic aromatic hydrocarbons (PAHs) in the soil/groundwater interface in one area of the Site. Due to these elevated levels of PAHs, EPA concluded that it is not appropriate, at this time, to issue an ESD to change the groundwater alternative to MNA.

Due to the presence of these residual PAHs, additional Site assessment was recommended. This assessment evaluated the potential presence, magnitude, and extent of residual contamination. During summer/fall 2012, EPA conducted the following activities:

- Collected soil samples from 14 soil borings to assess the potential source of persistent PAH groundwater contamination
- Abandoned and replaced one monitored well due to its poor condition
- Abandoned eight monitored wells due to poor condition and/or disuse
- Repaired three monitored wells, and
- Re-surveyed top of casings of all monitored wells.

The above work was captured in a report entitled, *Draft Data Evaluation Report – Soil Sampling, Well Abandonment, and Well Repair Activities – June – September 2012*, dated November 2012. The Agency anticipates using this report to support implementing an

in-situ chemical oxidation technology in the area will these elevated levels of PAHs are being detected. However, a treatability study/pilot study needs to be conducted in order to evaluate if in-situ chemical oxidation technology can be implemented. This study is scheduled to occur in 2014.

In April 2013, EPA presented the Region 4 "Excellence in Site Reuse" award to HVO for their involvement in the redevelopment of the Site. The "Excellence in Site Reuse" award recognizes those who have gone above and beyond in supporting the Superfund Redevelopment Initiative through outstanding efforts when redeveloping a Superfund Site.

RECOMMENDATIONS OF 2008 FIVE-YEAR REVIEW REPORT

The table below summarizes the status of the four recommendations made in the 2008 Five-Year Review Report.

Recommendations/Follow-Up Action from 2008 Five-Year Review Including Entity Responsible for Implementing Action, and Date When Action was Taken		
Recommendation	Status and Comments	Date Completed
The ROD requires use of extraction system. However, system was found to be inefficient and has been shut off.	Complete. Field work was completed however the findings of this effort indicate that an additional soil remediation effort is needed to address persistent groundwater contamination being detected in the groundwater in the western portion of the property.	2012
Bedrock groundwater	Complete. Analytical results for well sampled determined no risk associated with bedrock aquifer.	2010
Monitoring of surface water	Complete. No longer sampling surface water.	2008
Constant contaminant concentrations in MW03SH could be indicative of continuing source material being present.	Complete. Conduct additional soil sampling.	2012

RECOMMENDATION OF 2013 FIVE-YEAR REVIEW REPORT

Recommendations and Follow-Up Actions Based on 2013 Five-Year Review			
Issues	Recommendations/Follow-up Actions	Party Responsible	Milestone Date
No groundwater remediation alternative is currently employed at the Site.	Complete investigation/evaluation of technologies to address residual contamination in the soils at the groundwater table interface in the western portion of the Site and implement appropriate technology.	EPA & State	9/27/2014

PROTECTIVENESS STATEMENT FOR EACH OPERABLE UNIT

Protectiveness Statement – Currently the Site is protective of human health and the environment in the short term because the source has been removed and any residual soil contamination has been covered with clean fill material, the foundation of the building constructed on the Site in 2002, and/or a concrete/asphalt apron/driveway for the loading dock of the newly constructed building. The Site has been redeveloped and institutional controls have been implemented. Currently, no human exposure pathways exist to contaminated soil or contaminated groundwater, as municipal water is supplied at and surrounding the Site. For the Site to be protective in the long-term, an effective groundwater remedial action needs to be implemented.

FUTURE ACTIVITIES

Future activities include completing the evaluation of the most cost-effective technology to use to destroy the residual soil contamination begin detected in the vicinity of monitoring wells MW03s and MW03SH. Once this evaluation is completed, the Agency will issue either an additional ROD Amendment or ESD to document the approach to be taken to address this residual contamination.

FOR MORE INFORMATION

If you want further information on this Site or the Superfund program, please contact either of the individuals below:

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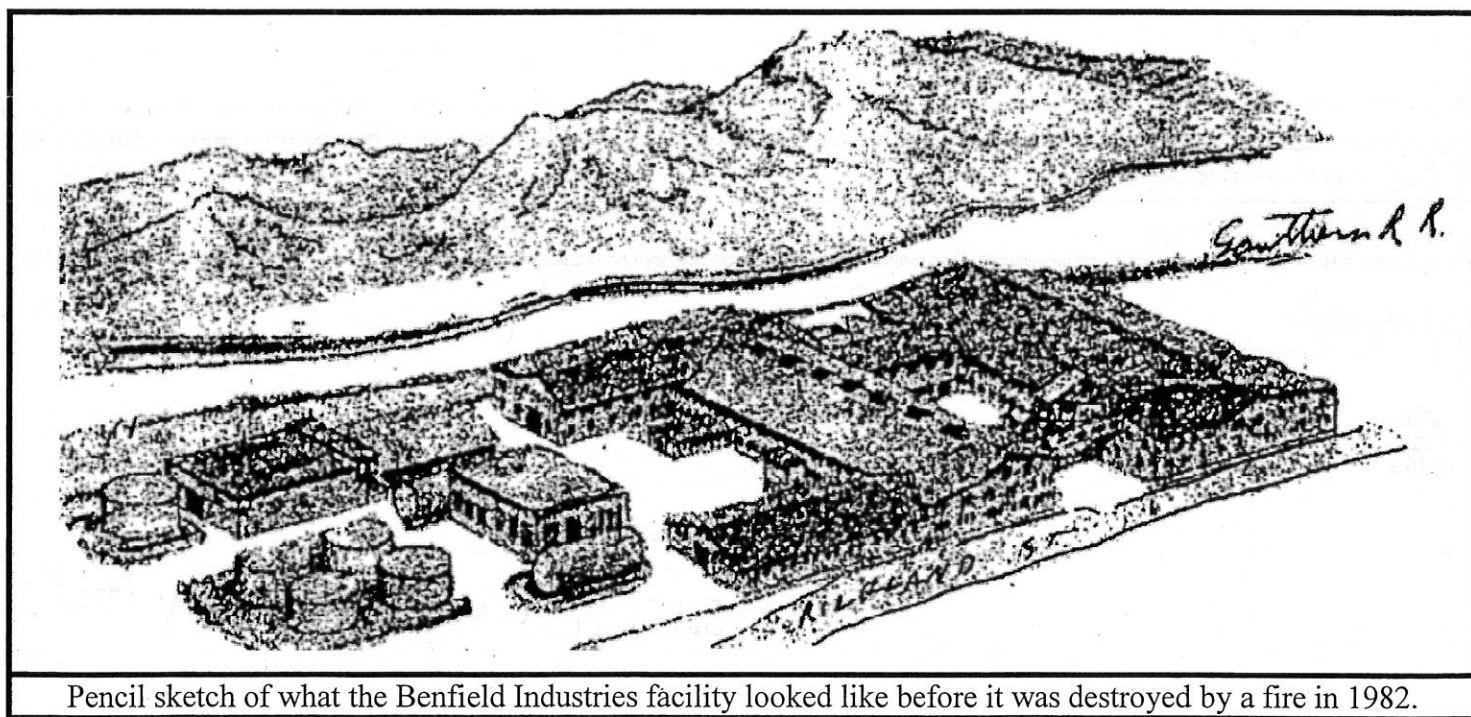
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U.S. EPA, Region 4
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INFORMATION REPOSITORY

Town of Waynesville City Hall
16 South Main Street
Waynesville, North Carolina



Pencil sketch of what the Benfield Industries facility looked like before it was destroyed by a fire in 1982.

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