

Letter Health Consultation

Health Evaluation of Groundwater Samples Collected in February 2010 by
U.S. EPA Contractors at the Former Benfield Industries NPL Site

WAYNESVILLE, HAYWOOD COUNTY, NORTH CAROLINA

EPA FACILITY ID: NCD981026479

**Prepared by the
North Carolina Department of Health and Human Services**

OCTOBER 5, 2010

Prepared under a Cooperative Agreement with the
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

A health consultation is a verbal or written response from ATSDR or ATSDR's Cooperative Agreement Partners to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR or ATSDR's Cooperative Agreement Partner which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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LETTER HEALTH CONSULTATION

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Letter Health Consultation

To: Mr. Carmine F. Rocco, MS
Health Director
Haywood County Health Department
Waynesville, NC

From: Sandy Mort, MS
Health Assessor
Health Assessment, Consultation and Education Program
N.C. Department of Public Health / DHHS
Raleigh, NC

Date: September 29, 2010

Subject: Health evaluation of groundwater samples collected in February 2010 by U.S. EPA contractors at the former Benfield Industries NPL site (EPA ID: NCD981026479)

Purpose

This Health Consultation reviews groundwater analytical data collected in February 2010 at the former Benfield Industries National Priorities List (NPL or "Superfund") site located in Waynesville, N.C. The purpose of a Health Consultation is to identify harmful health effects that could result from exposure to hazardous substances in the environment and to identify interventions necessary to protect public health. The groundwater data discussed in this report was collected after the completion of the N.C. Division of Public Health's (DPH) Public Comment Release Public Health Assessment published on February 18, 2010 for the same site [PHA 2010].

Site Background

The former Benfield Industries NPL site is located at 112 through 124 Riverbend Street in Waynesville, Haywood County, N.C. Benfield Industries, Inc. operated a bulk chemical mixing and repackaging facility on the site from 1976 until 1982, when a fire destroyed the plant. Products handled by Benfield Industries included: paint thinners, solvents, sealants, cleaners, de-icing solutions and wood preservatives. The original site covered 6 acres. After the fire, the N.C. Department of Environment and Natural Resources (DENR) ordered Benfield Industries to remove all chemicals and debris, and cover the site with clean fill material. This was completed in 1982. In 1989 the site was added to the U.S. Environmental Protection Agency's (EPA) National Priorities List (the "Superfund" program) as a means to finance further cleanup activities when Benfield Industries went out of business. During the Superfund clean-up it was identified that the soil and groundwater was contaminated with a variety of organic and metal substances.

Soil cleanup began in 1997 and continued until 2000. Active groundwater cleanup began on site in 2001 and continued until 2007.

In 2002, Haywood Vocational Opportunities, Inc. bought the 6-acre property. Haywood Vocational Opportunities completed re-development of the site in 2004 and currently operates a vocational training center on the site. The property deed includes perpetual land use restrictions recommended by N.C. DENR for the purpose of protecting public health and the environment. These restrictions prevent use of the property for residential purposes, prevent alteration or removal of existing soil, and prevent disturbance of existing soil contours. The deed also restricts the use of any surface or groundwaters on the site as source waters for drinking or swimming [EPA 2008]. Additional information on the site history, clean-up and re-development are available in the referenced EPA documents and the N.C. Division of Public Health's (DPH) Public Comment Release of the Public Health Assessment (PHA) released in February 2010 [PHA 2010].

Discussion of the Site Data

N.C. DPH concluded in the February release of the PHA [PHA 2010] that soils and groundwater on the site did not present a potential public health hazard because the property deed prevents disruption of soils or use of the groundwater on the former Benfield Industries site. The PHA also identified that N.C. DPH was not able to conclude if groundwater moving away from the site in the subsurface has the potential to harm people's health. This conclusion was based on:

- a lack of current analytical data to document the concentration of metals in the groundwater,
- a lack of information to determine if there are any private wells in the direction of groundwater flow away from the site, and,
- a lack of analytical data to determine if the lower bedrock aquifer (that EPA stated would likely be used as a local source for private drinking water wells) has been impacted by chemical contaminants from the site

N.C. DPH recommended the following to insure the protection of the local community:

- verify there are no private drinking water wells in the area that would be impacted by contaminated groundwater flowing away from the site,
- evaluate the need to test the lower bedrock aquifer that would likely be used for private drinking water wells, if existing, and,
- continue to monitor the groundwater for contaminants moving away from the site

In addition to the above recommendations, N.C. DPH requested copies of any new analytical data to be collected for the site so that N.C. DPH could evaluate the data to provide an independent evaluation of potential human health impacts of contaminants associated with the site.

There has been continued monitoring of the groundwater as part of EPA's on-going oversight of the former Benfield Industries NPL site. A groundwater remediation system constructed in 2001 was shut down in 2007. At that time, EPA recommended evaluation of "monitored natural attenuation" (MNA) as a cost effective and environmentally appropriate process to continue clean-up of the groundwater moving under and away from the site. MNA takes advantage of natural biological and chemical processes that can take place in a suitable groundwater environment to breakdown low levels of organic chemical contamination. Approval of the use of MNA at a Superfund site requires extensive testing to verify that this remedy will be protective of both human health and the environment.

In February 2010, an EPA contractor collected groundwater samples from 14 wells to determine if MNA was an appropriate remediation alternative for this site. Seven wells were located on the site, and 7 were located off-site (see Figure 1). The well sampled the greatest distance away from the site in the direction of groundwater flow was a private well last used in 1996. This closed private well is located 1900 feet northwest of the site (see Figure 2). This well had been drilled into the lower bedrock aquifer (405 feet below ground surface).

Chemical analyses were completed on the groundwater samples to monitor the current concentration of contaminants. The analyses also provided data to evaluate chemical and physical conditions for the suitability of the proposed monitored natural attenuation remediation alternative, and to look for indications that it was occurring. The analyses completed on the groundwater samples included:

- volatile organic compounds
- semi-volatile organic compounds
- metals
- inorganic and geochemical parameters

N.C. DPH's Evaluation of the Groundwater Data for Potential Health Effects

N.C. DPH received a draft copy of the EPA contractor's site report on May 12, 2010 [EPA 2010]. This report included the groundwater analytical data. N.C. DPH has reviewed the report and evaluated the groundwater analytical data. The Health Consultation process evaluates substances detected in the groundwater to determine their potential to adversely impact health if persons should come into contact with the groundwater. The Health Consultation process also includes an evaluation of how, and for how long, persons may come into contact with the groundwater. The potential for adverse health effects is determined by comparing the concentration of substances found in the groundwater to human health guideline values routinely used by N.C. DPH for this type of public health evaluation. The source of these values includes the Agency for Toxic Substances and Disease Registry (ATSDR), which is an agency within the U.S. Department of Health and Human Services (U.S. DHHS), and the EPA. N.C. DPH's public health evaluation process is described in detail in Appendix D of the PHA [PHA 2010].

N.C. DPH's review of the data gathered by the EPA contractor in February 2010 [EPA 2010] identified:

- There are no known existing private well users in the vicinity of the site in the direction of groundwater flow. All private well users in the area were connected to the municipal supply in 1996 when the area was annexed by the Town of Waynesville.
- Two volatile organic compounds detected at estimated concentrations less than the minimum reporting limit were detected in the closed private well sample. Neither compound was at a concentration greater than N.C. DPH's health screening value. Neither compound was detected in any of the other groundwater samples.
- A total of 41 organic compounds and 15 metals were detected in the groundwater samples.
- Three organic compounds, all in samples collected from groundwater wells located on the former Benfield Industries NPL site, were present at concentrations greater than health screening values. No organic chemicals were detected at concentrations greater than health screening values in off-site well waters.
- Three metals were present at concentrations greater than health screening values in the up-gradient groundwater well¹ located on the site. Two of the metals (cadmium and lead) were found only in the on-site up-gradient well. The third metal (manganese) was the only substance detected in both an on and off-site groundwater sample at a concentration greater than a N.C. DPH's health screening value. These manganese levels may be a result of native levels in this area, or may be increased in the area of microbial activity that is degrading the organic contaminants in the groundwater.

Table 1 lists substances detected in the groundwater samples at concentrations greater than the health screening values used by N.C. DPH for the health evaluation.

N.C. DPH's Conclusions

N.C. DPH concluded that chemical substances detected in the groundwater will not harm people's health. The basis of this conclusion is:

- There are no private wells existing in the immediate area of groundwater flow moving away from the former Benfield Industries NPL site. Therefore, people cannot come into contact with the water, and it is not being used as a drinking water source.
- The property deed for the former Benfield Industries NPL site (currently operating as Haywood Vocational Opportunities) restricts the use of groundwater on the site. This prevents contact with the groundwater under the site.

¹ The up-gradient well (or "background" well) is placed to intercept the groundwater flow before it reaches the contaminated area of the site. The up-gradient groundwater is used as an uncontaminated reference point for comparison of chemical concentrations in the groundwater collected in the contaminated areas.

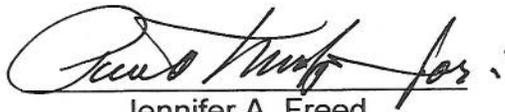
N.C. DPH's Recommendations

N.C. DPH makes the following recommendations regarding the continued monitoring and remediation efforts associated with the former Benfield Industries NPL site:

- EPA or N.C. DENR should continue to monitor the concentration of organic chemicals and metals in the groundwater under and flowing away from the site.
- Do not allow drinking water wells to be drilled in the area impacted by the site until all contaminants associated with the site have been reduced to levels that would not cause adverse health effects with long-term drinking, inhalation, or direct skin contact.

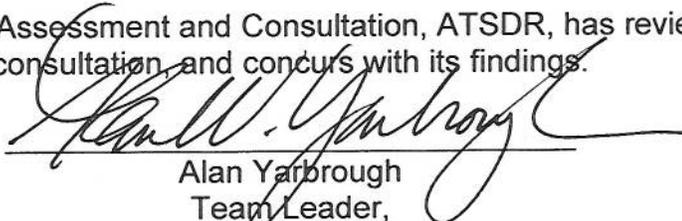
CERTIFICATION

This Letter Health Consultation for the Benfield Industries NPL Site (EPA ID: NCD981026479) was prepared by the North Carolina Department of Health and Human Services Division of Public Health (N.C. DHHS / DPH) under a cooperative agreement with the Federal Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consult and update was initiated. Editorial review was completed by the cooperative agreement partner.



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Technical Project Officer
Division of Health Assessment and Consultation (DHAC)
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



Alan Yarbrough
Team Leader,
CAT, CAPEB, DHAC, ATSDR

References

[EPA 2008]. *Final Superfund Second Five Year Review Report, Benfield Industries Site, EPA ID: NCD981026479, Waynesville North Carolina*. Prepared for the U.S. Environmental Protection Agency (EPA), Region 4. Prepared by the U.S. Army Corps of Engineers, Nashville District. July 2008.

[EPA 2010]. Draft Monitored Natural Attenuation Evaluation Report, Remedial Action Oversight Benfield Industries Site, Waynesville, North Carolina. Prepared for: U.S. Environmental Protection Agency Remedial Action Contract II LITE, Region IV, EPA Contract No. EP-S4-08-03. Task Order 009. J.M. Waller Associates, Inc. May 2010.

[PHA 2010]. Public Health Assessment – Public Comment Release – Benfield Industries NPL Site, Waynesville, Haywood County, North Carolina, EPA Facility ID: NCD981026479. Prepared by the North Carolina Department of Health and Human Services. February 18, 2010. Available at:
<http://www.epi.state.nc.us/epi/oeo/hace/ncmap/CountyInfo.html#Haywood>

Figure 1. Location of groundwater samples collected by U.S. EPA contractors in February 2010 for investigations at the former Benfield Industries NPL site, Waynesville, NC. Source: [EPA 2010]

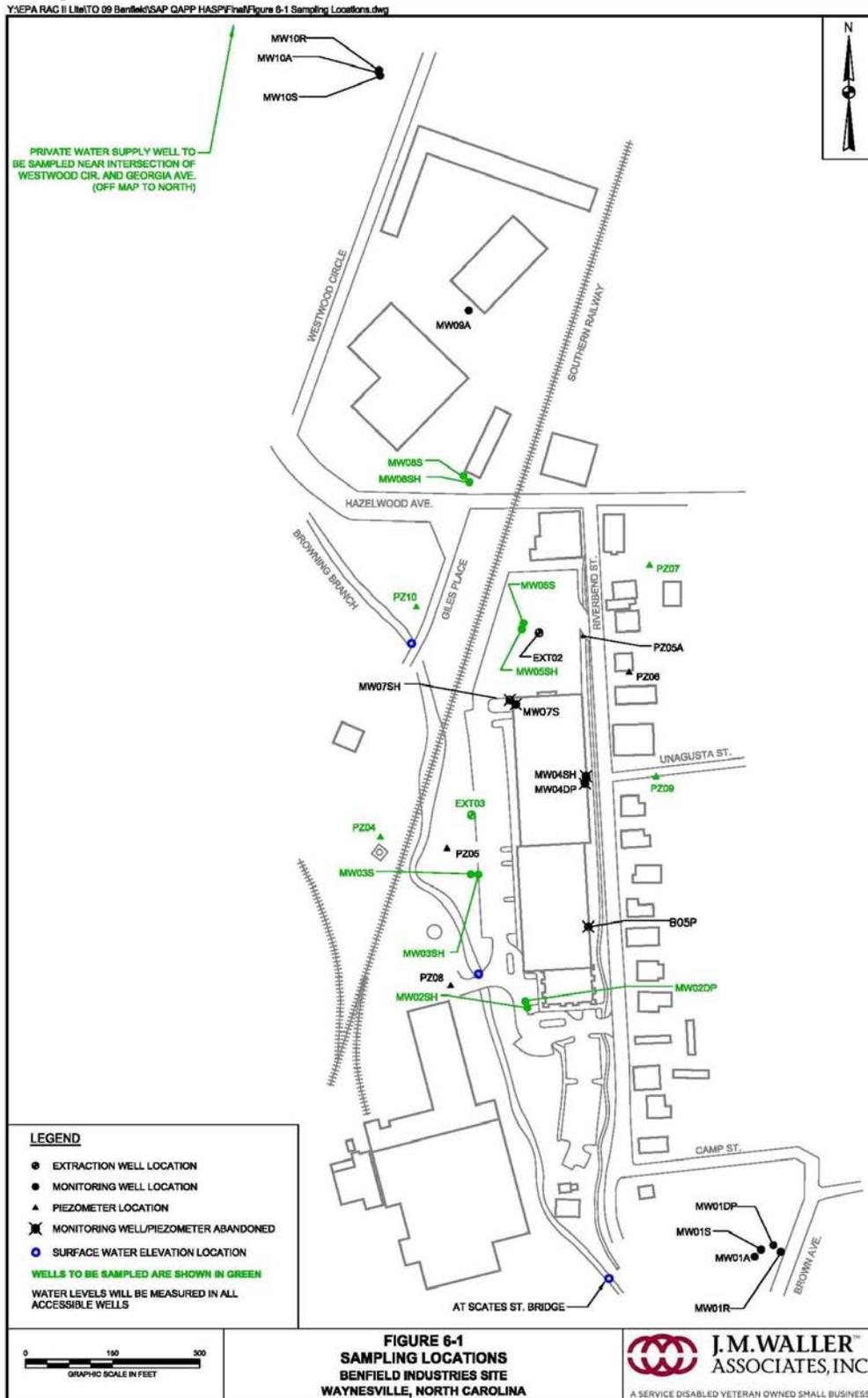


Figure 2. Location of the closed private well sampled in February 2010 during groundwater investigations of the former Benfield Industries NPL site. Source: [EPA 2010].

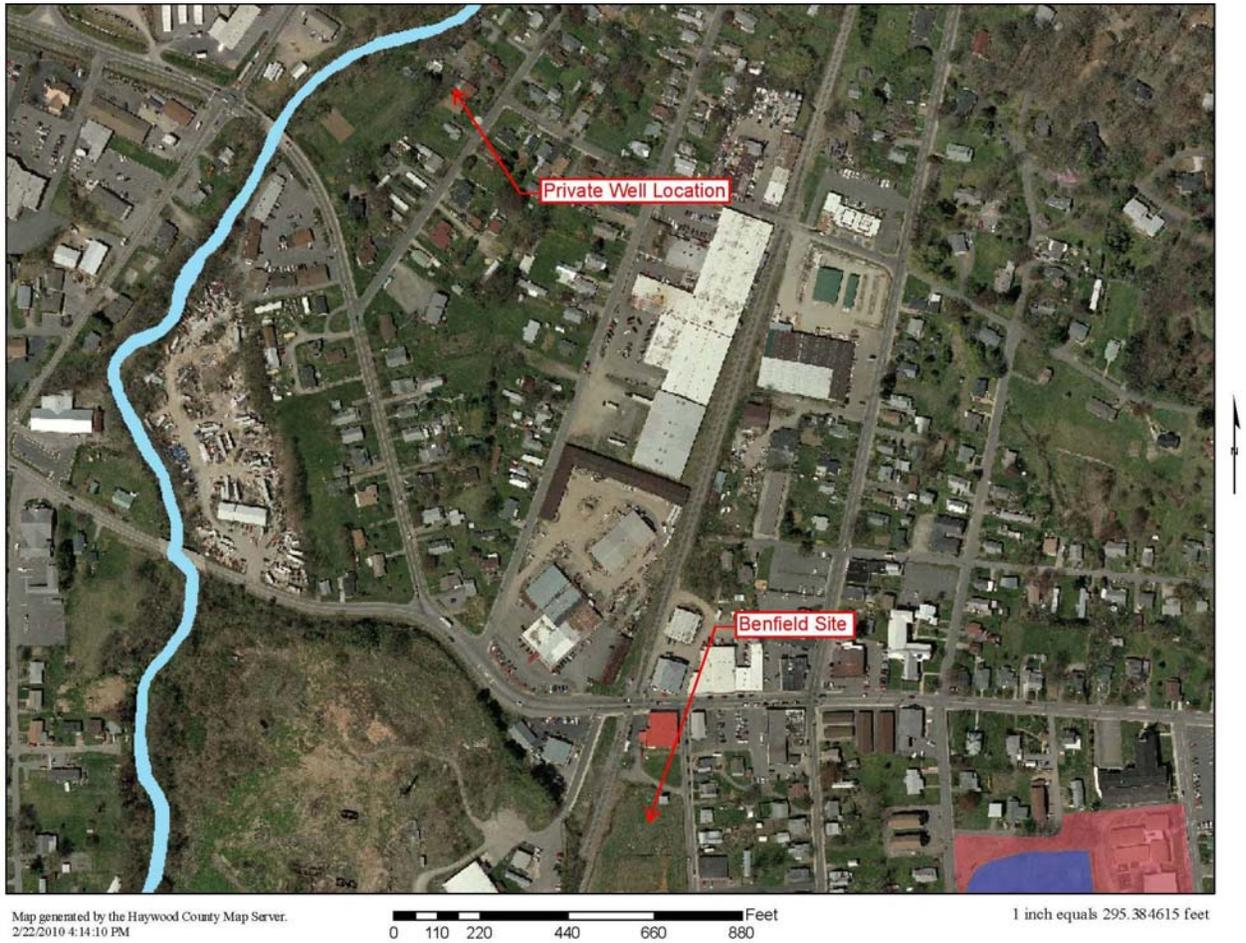


Table 1. Substances detected in groundwater samples collected for the former Benfield Industries NPL site, Waynesville, NC, in February 2010. Includes chemicals detected at concentrations greater than N.C. DPH health screening values.

Substances Detected in Groundwater Samples	Substance Type	Well Location	Concentration in Groundwater (in µg/L)	Health Screening Value ¹ (in µg/L)	Health Screening Value Type
Cadmium	Metal	MW02	2.1 J	1	ATSDR Child Chronic EMEG
Lead	Metal	MW02	210	15	EPA MCL AL
Manganese	Metal	MW02 MW05 MW08 PZ10	660 550, 2000 2400 4400	300	EPA LTHA
Benzo(a)pyrene	PAH / SVOC	MW03	0.11	0.005	ATSDR CREG
Benzo(a)anthracene	PAH / SVOC	MW03 MW05	0.68 ² 0.29	0.05 ³	ATSDR CREG
Vinyl chloride	VOC	MW05	0.24 ²	0.02	ATSDR CREG

Notes:

µg/L = microgram per liter (equivalent to "parts per billion")

MW = monitoring well

J = estimated concentration below analytical method reporting limit

EMEG = Environmental Media Evaluation Guide

MCL AL = Maximum Contaminant Level Action Level (EPA drinking water regulatory value for public water systems)

PZ = piezometer (a type of monitoring well)

LTHA = Lifetime Health Advisory

PAH = polynuclear aromatic hydrocarbon

SVOC = semi-volatile organic compound

VOC = volatile organic compound

CREG = Cancer Risk Evaluation Guide

¹ Health screening values determined by N.C. DPH for evaluation of potential for adverse health effects from ingesting (drinking) the groundwater. ² Concentration value listed is the average of 2 samples

³ Substance concentration is adjusted to a benzo(a)pyrene-equivalent concentration for comparison to PAH health screening values

Contact Information

Contact information for additional inquiries regarding the Benfield Industries NPL Site Letter Health Consultation:

Web links:

N.C. DPH HACE: <http://www.epi.state.nc.us/epi/oe/hace/reports.html>

ATSDR access to the Benfield Industries NPL Site Benfield Industries NPL Site Letter Health Consultation:

<http://www.atsdr.cdc.gov/HAC/PHA/index.asp>

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