

Health Consultation

WOODSTOCK MUNICIPAL LANDFILL

WOODSTOCK, MCHENRY COUNTY, ILLINOIS

EPA FACILITY ID: ILD980605943

MARCH 2, 2006

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR 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 which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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HEALTH CONSULTATION

WOODSTOCK MUNICIPAL LANDFILL

WOODSTOCK, MCHENRY COUNTY, ILLINOIS

EPA FACILITY ID: ILD980605943

Prepared by:

Illinois Department of Public Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Purpose

In August 2004, the U. S. Environmental Protection Agency (USEPA) released the first five-year review of the Woodstock Municipal Landfill (USEPA 2004). This health consultation updates the status of the site and evaluates recent groundwater and surface water samples on and near the site to determine if the site poses a public health hazard.

Background and Statement of Issues

The Woodstock Municipal Landfill is a 42-acre site in McHenry County, Illinois, which has been placed on the USEPA National Priorities List (NPL). The landfill is on the southern edge of Woodstock and is within the city limits (Figures 1 & 2) (IDPH 1997).

From 1935 until 1958, the site was a trash dump and an open burning area used by unknown people and companies. From 1958 to 1968, it was used for residential garbage and various industrial solid wastes (sources and types mostly unknown). In 1965, the site was converted into a sanitary landfill, and operations continued until it was closed in 1975 (USEPA 2004, IDPH 1997).

On April 30, 1997, the Agency for Toxic Substances and Disease Registry (ATSDR) released a public health assessment (PHA) for the site prepared by the Illinois Department of Public Health (IDPH) under a cooperative agreement. The PHA concluded that the Woodstock Municipal Landfill posed no apparent public health hazard because there was no exposure to contaminants at levels that would cause adverse health effects. Key recommendations of this PHA were (IDPH 1997):

- Conduct periodic monitoring of private wells that are closest to the site (east, south, and west of the site) to ensure that no exposure is occurring to hazardous substances at levels of public health concern.
- Determine which private wells using the deeper glacial till aquifer are downgradient of the site and the likelihood of their contamination.
- Maintain the existing institutional controls to prevent the construction of homes or other structures that would compromise the cap and would likely cause exposure to on-site contaminants. In addition, landfill gas may penetrate into any future buildings constructed on the landfill and create a health and flammability hazard.
- Continue periodic monitoring of on-site wells to detect possible changes in contaminants, their concentrations, and migration.

USEPA issued an amendment to the Record of Decision (ROD) on July 15, 1998. After negotiations with the potentially responsible parties failed, on November 3, 1999, USEPA issued a Unilateral Administrative Order for the City of Woodstock (City) and Allied Signal

Corporation to implement the approved cleanup plan. The site remedy was implemented from September 1999 through September 2000. The remedial actions included a new landfill cap with a geotechnical fabric barrier and monitored natural attenuation of contaminated groundwater. The City also implemented institutional controls to limit future site use and prevent installation of private wells on the site (monitoring wells are permitted). The City has proposed constructing two soccer fields on the site by 2007. On August 5, 2004, a USEPA inspection found the condition of the landfill cap to be adequate (USEPA 2004).

The nearest homes with private wells are north of the site and are upgradient. The land immediately south of the site is wetland, making future development of private wells immediately south of the site unlikely.

Community Concerns

In early July 2004, USEPA published notice of their five-year-review of the site and asked for public comments. No one responded, either by phone or in writing (USEPA 2004).

Discussion

Chemicals of Interest

IDPH compared the maximum level of each contaminant detected during environmental sampling with appropriate screening comparison values. This was to select contaminants for further evaluation for both carcinogenic and non-carcinogenic health effects. Chemicals that exceeded comparison values were selected for further evaluation. A description of each of the comparison values is found in Attachment 1.

IDPH used the comparison values to screen for contaminants that warranted further evaluation. These comparison values do not represent thresholds of toxicity. Although some of these chemicals may exist at levels greater than comparison values, the contaminants can only affect someone exposed at sufficient doses. The amount of the contaminant, the duration and route of exposure, and the health status of exposed individuals are important factors in determining the potential for adverse health effects.

Air

The only nearby homes are immediately north of the site. Gas vents on the northern side of the site have had no measurable levels of combustible gases since they were installed (Bradley 2004).

Groundwater

On October 13 and 14, 2003, Conestoga-Rovers & Associates (2004) sampled on-site monitoring wells and had the water analyzed for inorganic chemicals and volatile organic compounds (VOCs). Table 1 shows the results. Barium, manganese, and vinyl chloride exceeded their comparison values, but each did so in only one monitoring well. They were not elevated in more distant monitoring wells. Conestoga-Rovers & Associates (2004) reported that vinyl chloride concentrations in monitoring wells have been declining over time, particularly since completion of the landfill cap in 1999 and 2000.

Soil

Soil contaminants are now contained under the new landfill cap. Consequently, surface soil is no longer contaminated.

Surface Water

The Kishwaukee River begins near the site and flows into a drainage ditch near the southern boundary of the site. On October 15, 2003, Conestoga-Rovers & Associates (2004) took two surface water samples from the Kishwaukee River, one upstream and one downstream of the landfill. The samples were analyzed for inorganic chemicals and VOCs. None of the chemicals were at greater concentrations downstream from the landfill (Conestoga-Rovers & Associates 2004), indicating that the landfill had no effect on the water quality of the Kishwaukee River.

Exposure Pathways

A hazardous chemical can affect people only if they contact it through an exposure pathway at a sufficient concentration to cause an adverse effect. This requires:

- A source of exposure,
- An environmental transport medium,
- A route of exposure, and
- A receptor population
- A point of exposure.

A pathway is complete if all its components are present and exposure of people occurred in the past, is occurring, or will occur in the future. If parts of a pathway are absent, data are insufficient to decide whether it is complete, or exposure may occur at some time (past, present, future), then it is a potential pathway. If a part of a pathway is not present and will never exist, the pathway is incomplete and can be eliminated from further consideration.

Air

Monitoring of landfill gas vents north of the site has not detected combustible gases. The only buildings nearby are several homes approximately 2,000 feet north of the site. Flammable levels of landfill gas are not likely to enter buildings near the site.

Groundwater

Groundwater flow at the site is to the south and southwest (Conestoga-Rovers & Associates 2004, IDPH 1997). The City of Woodstock is served by public wells, which are about 3 miles north of the site (IDPH 1997). The nearest homes with private wells are north of the site and are upgradient of the contamination. The nearest private wells downgradient of the site are 0.9 miles to the south-southeast, 1.3 miles to the south, and 0.6 miles to the southwest. The land immediately south of the site is a wetland, making future development of private wells immediately south of the site unlikely. More distant monitoring wells are uncontaminated. Institutional controls prohibit the construction of potable water wells on the site. Vinyl chloride concentrations in groundwater have been declining, particularly since construction of the new landfill cap in 1999 and 2000. Consumption of contaminated groundwater is unlikely to occur, making this an incomplete exposure pathway.

Surface Soil

Soil contaminants now are contained under the landfill cap. Existing institutional controls should prevent any excavation that could expose contaminants. Also, the site remedy includes long-term maintenance of the cap to ensure its integrity. The construction of the cap and its long-term maintenance has eliminated the possible exposure to contaminants in surface soil.

Surface Water

Sampling found that the landfill did not increase the concentrations of contaminants in water of the Kishwaukee River. Exposure to contaminants in surface water is an incomplete exposure pathway.

Public Health Implications

Although contaminants are present on the site, people are not being exposed to these contaminants. Existing institutional controls, long-term groundwater monitoring, and long-term landfill cap maintenance should ensure that such exposure does not occur. Consequently, IDPH does not expect any site-related adverse health effects in anyone living near the site or visiting the site.

Child Health Considerations

IDPH recognizes that children are especially sensitive to some contaminants. Children currently are not being exposed to site contaminants. Construction of the proposed soccer fields will increase the number of children who use the site. However, contaminants will remain under the site cap, preventing exposure. IDPH expects no adverse health effects from children playing soccer on the site.

Conclusions

The Woodstock Municipal Landfill continues to pose no apparent public health hazard because exposure to contaminants is not occurring at levels that might cause adverse health effects. Existing institutional controls, long-term groundwater monitoring, and long-term landfill cap maintenance should ensure that such exposure does not occur.

Recommendations

IDPH recommends that parties responsible for the landfill continue to monitor groundwater contamination and ensure the integrity of the landfill cap, under USEPA supervision.

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References

- Bradley, B. 2004. Email of November 22 to Thomas A. Baughman. U.S. Environmental Protection Agency.
- Conestoga-Rovers & Associates. 2004. 2003 Annual Monitoring Report, Woodstock Municipal Landfill Site, Woodstock, Illinois. February 2004.
- IDPH. 1997. Public Health Assessment, Woodstock Municipal Landfill, Woodstock, McHenry County, Illinois, CERCLIS No. ILD980605943. April 30.
- U.S. Bureau of the Census. 2000. Accessed on December 8, 2004 at:
<www.census.gov>
- USEPA. 2004. Five Year Review Report, Woodstock Municipal Landfill, City of Woodstock, McHenry County, Illinois. August.

Table 1. Concentrations of chemicals in monitoring wells at the Woodstock Municipal Landfill in October 2003 (Conestoga-Rovers & Associates 2004).

Chemical	Concentration (ppb)	Comparison Value (ppb)	Source of Comparison Value
Inorganic Chemicals			
Barium	N.D.-864	700	RMEG
Manganese	39.6-711	500	RMEG
Volatile Organic Compounds			
Vinyl Chloride	N.D.-5.8	0.03	CREG

ppb = Parts Per Billion

N.D. = Not Detected

RMEG = Reference Dose Media Evaluation Guide

CREG = Cancer Risk Evaluation Guide

Figure 1

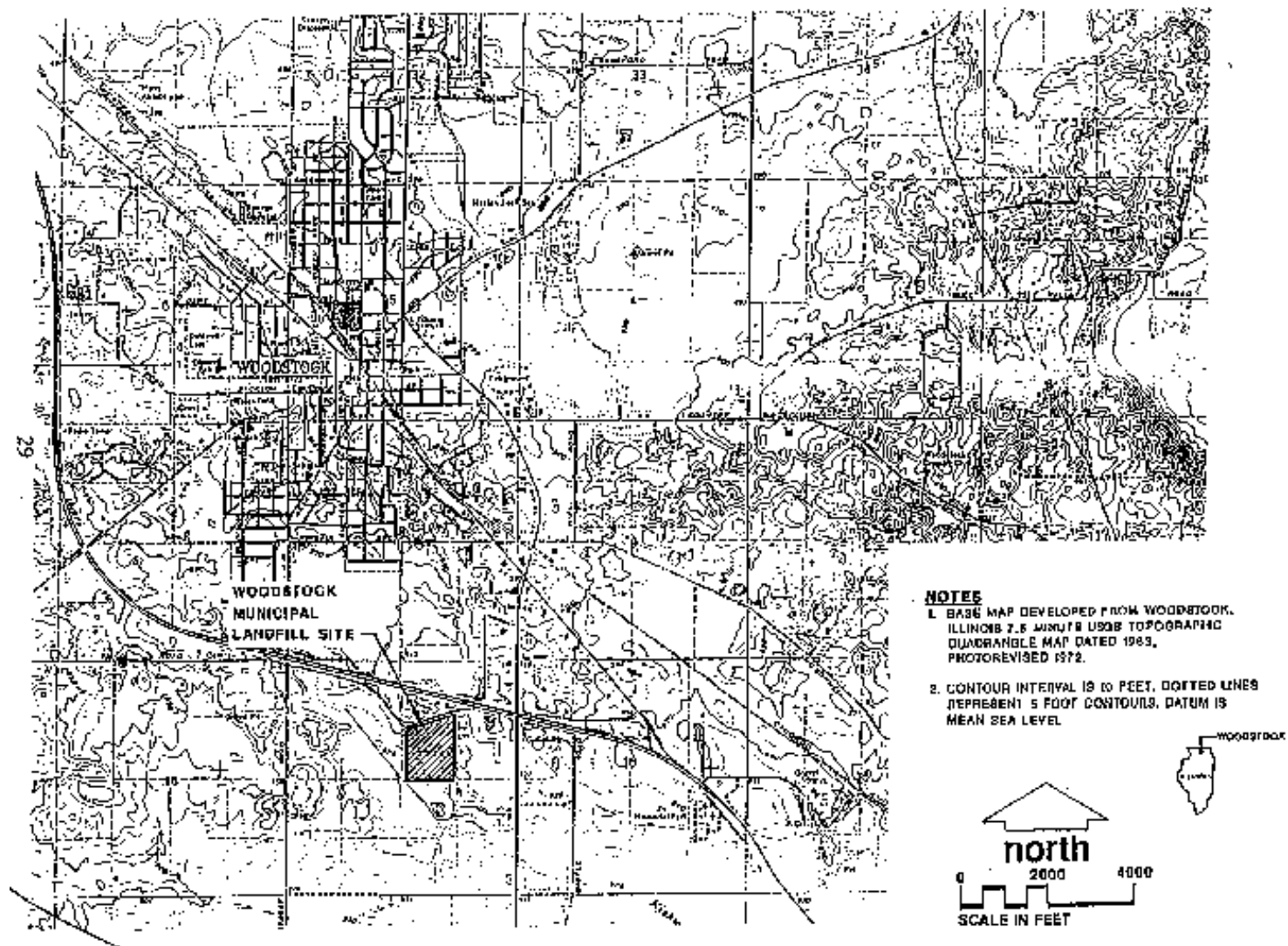
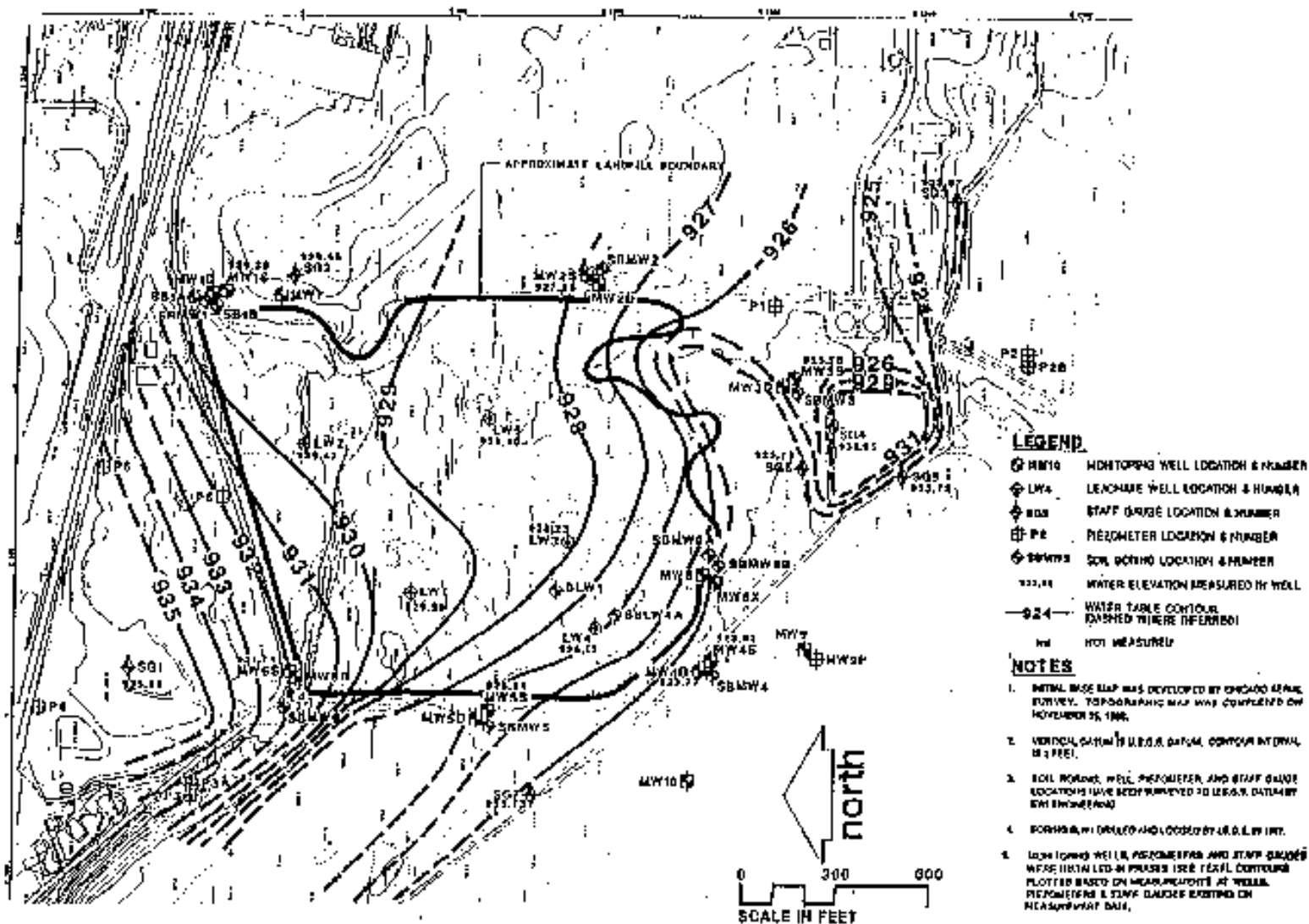


Figure 2



ATSDR Comparison Values Used in Screening Contaminants for Further Evaluation

Environmental Media Evaluation Guides (EMEGs) are developed for chemicals based on their toxicity, frequency of occurrence at National Priorities List (NPL) sites, and potential for human exposure. They are not action levels but are comparison values. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They are very conservative concentration values designed to protect sensitive members of the population.

Reference Dose Media Evaluation Guides (RMEGs) are another type of comparison value. They are developed without consideration for carcinogenic effects, chemical interactions, multiple route exposure, or exposure through other environmental media. They are very conservative concentration values designed to protect sensitive members of the population.

Cancer Risk Evaluation Guides (CREGs) are estimated contaminant concentrations based on a probability of one excess cancer in a million persons exposed to a chemical over a lifetime.

Maximum Contaminant Levels (MCLs) have been established by the U.S. Environmental Protection Agency (USEPA) for public water supplies to reduce the chances of occurrence of adverse health effects from use of contaminated drinking water. These standards are well below levels for which health effects have been observed and take into account the financial feasibility of achieving specific contaminant levels. MCLs are limits that public water supplies must meet, and they are enforceable by USEPA.

Lifetime Health Advisories (LTHAs) USEPA has established LTHAs for drinking water. LTHAs are concentrations of specific chemicals in drinking water that are not expected to cause any adverse, noncarcinogenic health effects over a lifetime (70 years) of exposure. These are conservative values that incorporate a margin of safety.

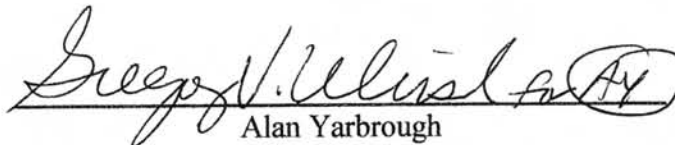
Certification

This Woodstock Municipal Landfill Public Health Consultation was prepared by the Illinois Department of Public Health under a cooperative agreement with the federal Agency for Toxic Substances and Disease Registry (ATSDR). It was completed in accordance with approved methodologies and procedures existing at the time the health consultation was initiated. Editorial review was completed by the Cooperative Agreement partner.



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



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