SITE REVIEW AND UPDATE

DOVER MUNICIPAL WELL 4

DOVER TOWNSHIP, MORRIS COUNTY, NEW JERSEY

CERCLIS NO. NJD980654131

Prepared by:

New Jersey Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY OF BACKGROUND AND HISTORY

The Town of Dover Municipal Well #4 (DMW # 4) is located approximately 450 feet north of the Rockaway River in the Town of Dover, Morris County. Although most of the Town of Dover is residential, DMW # 4 is located in a commercial/industrial section of town. A middle school is located about 2000 feet northwest of DMW # 4 and a Conrail Railroad spur is located approximately thirty feet to the south. The well is located about 1.5 miles east of three high production wells (#1, #3, and #5) which serve the surrounding community of 22,000 people. The well field is owned and operated by the Dover Water Commission. The well head itself is housed within a brick building and the small amount of surrounding property is secured with a chain link fence.

It should be noted that the term "DMW #4" refers to the actual well itself while the term "DMW #4 Site" is used to define the area around the well including the entire capture zone.

DMW #4 was drilled in 1962, and when water supply operations began in June 1965, it was one of the town's primary water supply wells. DMW #4 was a high production well with an average pumping rate of 1,100 gallons per minute. In March 1980, sampling and analysis of groundwater from the well conducted by the Town of Dover revealed the presence of volatile organic compounds (VOC's) including 1,1,1-trichloroethane and tetrachloroethylene.

The New Jersey Department of Environmental Protection and Energy (NJDEPE) conducted additional sampling later the same year and also noted the presence of trichloroethylene. Based on these sampling results, DMW #4 was voluntarily removed from service by Dover in September 1980. Standby well #3 is currently being used to replace DMW #4.

The site was placed on the National Priorities List (NPL- a.k.a. Superfund) in 1983. A Remedial Investigation/Feasibility Study (RI/FS) of the DMW #4 site began in 1986. The study included the drilling of 7 pilot borings and sampling of subsurface soils as well as the installation of 17 clustered groundwater monitoring wells. Resampling of the groundwater monitoring wells in 1989 confirmed the VOC contamination. Of 22 sites sampled, five showed VOCs equal to of greater than 1 part per billion (μg/l) and with one site as high as 3700 μg/l.

As of this date, the potentially responsible parties (PRPs) for this site have not been conclusively determined. Two of the original PRPs, New Jersey Natural Gas (NJNG) and Howmet Turbine, have their own documented contamination problem, but neither appears to be responsible for the chlorinated solvent groundwater contamination of DMW #4. The NJNG site may pose a potential threat to DMW #4 from the migration of other site-related contaminants, should pumping of DMW #4 resume.

The groundwater FS was released to the public in August, 1992 and a Record of Decision (ROD) was signed on September 30, 1992. The ROD selected an alternative to remediate the DMW #4

which includes well head extraction, treatment (Air Stripping) and discharging the water into Dover's public water supply System.

A Health Assessment was prepared for the Agency for Toxic Substances and Disease Registry (ATSDR), by the New Jersey Department of Health (NJDOH), on June 20, 1990. The Health Assessment noted that contaminated groundwater was the only identifiable human exposure pathway. It also concluded that potential human exposure to VOC contaminated well water may have occurred between 1965 and 1980, but it was considered unlikely that the exposures resulted in any acute health effects. Long term effects on residents could not be evaluated since there were no data on well contaminants prior to 1980.

The Health Assessment did not report specific site-related community health concerns, however, according to the Dover Health Department (personal communication) there was some past community concerns regarding past exposures to site contaminants in area groundwater.

In its final conclusion, based on the available data, ATSDR found the DMW #4 site to be of potential public health concern. The Health Assessment made two recommendations. First, that until the groundwater aquifer is remediated, DMW # 4 should remain closed. The report also recommended that the site be considered for inclusion in the large scale epidemiological study on contamination of public drinking water being developed by the NJDOH. In April, 1992 the New Jersey Department of Health (NJDOH) completed and published a report on Public Drinking Water Contamination and Birthweight, Fetal Deaths, and Birth Defects (Cross-Sectional Study). In May, 1992 the New Jersey Department of Health (NJDOH) completed and published a report on Public Drinking Water Contamination and Birthweight, and Selected Birth Defects (Case-Control Study). These studies were initiated in cooperation with Centers for Disease Control (CDC) in response to considerable public health concern in New Jersey (NJ) about the quality of drinking water. The Dover Municipal Well 4 was included in both studies to evaluate the potential relationship between public drinking contamination and adverse reproductive outcomes. The studies utilized data from birth certificates, fetal death certificates, New Jersey Birth Defects Registry forms, and data obtained from NJDEPE's A-280 Program which requires all public water purveyors to sample their water distribution system twice annually for 14 volatile organic chemicals (VOCs), polychlorinated biphenyls (PCBs), and chlordane. In addition, phone interviews were conducted of the mothers of the cases and controls for case-control study. The study period was January 1, 1985 to December 31, 1988, the four years commencing when the Birth Defects Registry was initiated and the New Jersey drinking water monitoring statute took effect.

CURRENT CONDITIONS OF SITE

On June 28, 1993, N.P. Singh and J.J. Winegar of the NJDOH visited the DMW #4 site accompanied by the U.S. Environmental Protection Agency (USEPA) site manager, C. McEnery, and the ATSDR Regional Representative, S.L. Jones.

The site was found to be a small one story brick building surrounded by a chain link fence. The fence was secure and surrounded the entire building including a narrow vehicle right of way. The building itself appeared to be secure and their was no evidence of any trespassing on the site.

As noted in the site documents, the surrounding area is largely industrial. There are, however, some residences which are close and some even adjacent to the fence.

One observation made during the site visit was the activity noted on the nearby NJNG site. NJNG was apparently drilling a groundwater monitoring well on their site. An operating drill rig and workers in personal protective clothing were observed.

According to the Dover Health Department, the well has been out of operation since it was closed in 1980 and the conditions at the site have not changed since the original Health Assessment was written. The groundwater beneath the DMW #4 site remains contaminated and all known use of private wells has ceased.

As noted in the recent ROD, September 30, 1992, a plan to renew pumping, treating, and discharging water to Dover's potable water supply system, has been proposed and approved by USEPA. The proposed plan may include the addition of two new extraction wells at the site. However, all water will be treated to remove/reduce contaminant concentrations (below NJ MCLs) since water quality will be closely monitored by NJDEPE and local officials. Additional evaluation of water quality from this well by the NJDOH and the ATSDR is not indicated.

CURRENT ISSUES

Past public health concerns about earlier exposures to groundwater contaminants have been partially addressed through the inclusion of the Town of Dover in the large scale epidemiological study on contamination of public drinking water conducted by the NJDOH.

The implementation of the final remedial design selected in the ROD should occur in FFY 1993. Once implemented, the selected treatment remedy, air stripping, will prevent future exposure of Dover residents to contaminated groundwater.

The FS prepared for this site recognizes the fact that the proposed extraction and treatment remedy may not, during actual operation, be able to reach the required minimum contaminant levels (MCLs). Promulgated Federal and New Jersey Safe Drinking Water Act MCLs, and/or New Jersey Groundwater Quality Standards will dictate cleanup levels for the ground water remediation. If the MCLs can not be reached the water will not be used for potable water.

The selected remedy will include ground water extraction for an estimated period of 16 years, during which time the remedial system's performance will be carefully monitored and adjusted as needed to comply with above referenced water standards. These actions will significantly reduce the threat of potential human exposure to contaminated ground water.

As per personal conversation with the Dover Health Officer, members of the community are concerned about the location, size and potential noise problems from the proposed air stripper. These issues will be addressed during the design phase of the selected remedy for the DMW #4 site.

CONCLUSIONS

Based on available information, the aquifer groundwater at the DMW #4 site is contaminated with VOCs including, 1,1,1-trichloroethane, tetrachloroethylene, and trichloroethylene.

Conclusions that were made in the 1990 ATSDR Health Assessment regarding the site being of potential public health concern remain valid. This conclusion was made because residents may have been exposed to contaminants in the past at levels of public health concern. ATSDR and NJDOH consider the site as posing an indeterminate public health hazard in the past due to exposures to contaminated ground water, but there is very limited data available indicating the levels of exposure or the duration of exposure among residents potentially exposed. This information is needed to completely evaluate the community health concerns about past exposures to contaminated drinking water.

Currently, there are no completed exposure pathways associated with the DMW #4 site as a result of the well being out of service since 1980. When the well goes back into service it should not constitute a hazard as groundwater contaminants will be reduced to levels below MCL's and water quality will be continuously monitored.

The Health Assessment recommended that DMW #4 remain closed until "the aquifer is remediated" has been followed. Under current site conditions that recommendation, however, does not take into account the selected site remedy of pumping and treating the groundwater to the public water supply, rather than directly remediating the aquifer.

The recommendation from the Health Assessment for periodic monitoring of contaminant levels of the towns drinking water is satisfied by the specific testing requirements of the New Jersey Safe Drinking Water Act. Stringent and periodic testing of the water quality by USEPA and NJ authorities should preclude further evaluation of the site by ATSDR and NJDOH.

The recommendation that the site be considered for inclusion in the NJDOH epidemiological study on contamination of public drinking water was satisfied.

Except for the concern for past exposures to contaminated drinking water, remedial activities specified in the Record of Decision for the DMW #4 site, when implemented, are sufficient to address remaining concerns of the ATSDR, the NJDOH, and the community regarding the site. The remedial actions are consistent with protection of the public health.

RECOMMENDATIONS

The recommendations from the previous Health Assessment that the well be kept out of service until remediated and for periodic monitoring of contaminant levels in the towns drinking water are still valid.

After a review of the most recent documents and the current site conditions for the DMW #4 site, the ATSDR and the NJDOH have determined that, while no current human exposures are occurring, there is concern about past exposures. It is, therefore, recommended that the DMW #4 site be considered as a candidate for ATSDR Exposure Dose Reconstruction. After the exposure dose is determined, then a Health Consultation will be performed to determine the public health significance of past exposure to contaminated drinking water.

New environmental, toxicological, health outcome data, or changes in conditions as a result of implementing the proposed remedial plan, may determine the need for other additional actions at this site.

PUBLIC HEALTH ACTION PLAN

The purpose of the public health action plan (PHAP) is to ensure that this Site Review and update not only identifies public health hazards but also provides a plan of action designed to mitigate and prevent adverse human health effects resulting from exposure to hazardous substances in the environment.

Actions Undertaken by ATSDR:

These data and information developed in the Site Review and Update have been evaluated by ATSDR to determine if Exposure Dose Reconstruction was possible. The ATSDR has determined that exposure doses, for past exposures at the DMW #4 site, could not be reconstructed from available data. The site is, therefore, an indeterminate health hazard.

DOCUMENTS REVIEWED

1. Feasibility Study Report, Dover Municipal Well No. 4 Site, TRC Environmental Consultants, Inc., June 1992.

2. Health Assessment for Dover Municipal Well No. 4, Dover, New Jersey, ATSDR, June 20 1990.

3 . Record of Decision, Dover Municipal Well No. 4, USEPA, September 30, 1992.

4. Bove, F, et. al., Report on Phase IV-A and B: Public Drinking Water Contamination and Birthweight, Fetal Deaths, and Birth Defects, New Jersey Department of Health, April - May, 1992.

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