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APPENDIX A.8

GROUNDWATER USE & VALUE DETERMINATION

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

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KERRY HEALEY
Lieutenant Governor

ELLEN ROY HERZFELDER
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

June 21, 2004

Robert Cianciarulo, Chief
Massachusetts Superfund Section
U.S. EPA Region I
JFK Federal Building
Boston, MA 02203

RE: Groundwater Use and Value Determination
Wells G + H Superfund Site (MAD #980732168, RTN#3-0479)

Dear Mr. Cianciarulo:

Enclosed please find the Groundwater Use and Value Determination prepared by the Department (DEP) for the Wells G + H Superfund Site (the Site). This Determination was conducted by the DEP pursuant to the Memorandum of Agreement (1998) between the U.S. Environmental Protection Agency and the DEP.

In determining the use and value of the groundwater in the vicinity of the Wells G + H Site, we referred to the aquifer classification system in the Massachusetts Contingency Plan (MCP). The classification in the MCP gives consideration to all of the factors in the Use and Value Guidance. Enclosed with the Use and Value Determination is a copy of the GIS map used to determine the aquifer classification. This map provides a variety of information, including the USGS yield classification, the presence of public water supplies and zones of protection, surface water bodies, wetlands, protected open space areas, and drainage basin boundaries.

If you have any questions regarding this letter, please don't hesitate to contact me at 617-654-6651.

Sincerely,

Richard Chalpin
Assistant Commissioner, Bureau of Waste Site Cleanup

cc. Joe LeMay, EPA
Anna Mayor, MADEP
Gordon Bullard, TTNUS
enclosure

This information is available in alternate format. Call Aprel McCabe, ADA Coordinator at 1-617-556-1171. TDD Service - 1-800-298-2207.

DEP on the World Wide Web: http://www.mass.gov/dep
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GROUNDWATER USE AND VALUE DETERMINATION
Wells G + H Superfund Site
Woburn, MA

June 2004

Consistent with the Environmental Protection Agency's (EPA) 1996 Final Ground Water Use and Value Determination Guidance, the Department has developed a "Use and Value Determination" of the groundwater beneath the Wells G + H Superfund Site (the "Site"). The purpose of the Use and Value Determination is to identify whether the aquifer at the site should be considered of "High", "Medium", or "Low" use and value. In the development of its Determination, the Department has applied the criteria for groundwater classification as promulgated in the Massachusetts Contingency Plan (MCP). The classification contained in the MCP considers criteria similar to those recommended in the Use and Value Guidance as agreed to in the Memorandum of Agreement (MOA) between EPA and DEP. The Department's recommendation supports a medium use and value for the Site Area groundwater. A brief background of the Site, an explanation for the determination, and a table listing the criteria that facilitated the determination are outlined below.

The Site covers approximately 330 acres in eastern Woburn, Massachusetts. The Site is bounded by Route 128/95 to the north, Route 93 to the east, the Boston and Maine railroad to the west, and Salem Street to the south. The groundwater under evaluation for this determination is within the boundaries of the Site as shown on the attached Figure.

The Site is almost entirely within the Interim Wellhead Protection Area (IWPA) of the two municipal wells G + H. The two wells reside near the center of the Site as shown on the Figure. The aquifer within the Site is classified as medium and high yield by the United States Geological Survey (USGS). Combined, the wells had a pumping capacity of approximately 1.73 million gallons of water per day (MGD). Wells G + H were shut down in May of 1979 when high levels of chlorinated organics were discovered in both wells. Since that date the wells have not been used. However, the City has not formally abandoned the wells in accordance with the DEP's regulations; therefore, at this time the DEP Drinking Water Program has classified the wells as inactive.

Approximately two thirds of the water currently used by the City is from seven groundwater wells in a separate aquifer under Horn Pond, and the remainder is supplied by the Massachusetts Water Resources Authority. There have been problems with TCE contamination from an unknown source in the aquifer at Horn Pond, as well as bacterial contamination from a nearby Combined Sewage Overflow (CSO), but these have been stabilized and controlled. City engineers have indicated to the DEP's Drinking Water Program that the stability of the current water supply and the expression of public opinion against the use of the G + H wells for drinking has meant that the likelihood of using the inactive wells in the near future is very low. However, they have also expressed to DEP that they do not want to eliminate the possible future use of the resource. Water usage has increased tenfold since the City's water system became operational in 1873, and is now at least 6 million gallons of water per day.

With regard to the cleanup of the Site, an intensive remedial investigation was conducted through the 1980s following the shut down of the wells. A Record of Decision issued by EPA in September of 1989 required the remediation of the sources of the contamination to the wells, and

the investigation of the Central Area groundwater and the Aberjona River. To date, contaminated soil at the Site has been remediated at three of the source areas known as Wildwood Conservation Trust (also known as Beatrice Food Corporation), New England Plastics, Inc., and W.R. Grace. Contaminated soils remain at the Unifirst Corporation and the Olympia Nominee Trust properties. The remaining contaminants include chlorinated organics, heavy metals, polychlorinated biphenyls (PCBs), and other wastes.

The investigation of the Aberjona River, which flows through the center of the site, has indicated that contaminants are present in both sediment and surface water. The sediment of the Aberjona River contains elevated levels of metals including arsenic, chromium, mercury, copper and lead, volatile and semi-volatile organics, pesticides, and PCBs. The surface water contains volatile organics, pesticides, semi-volatile organics, and metals. The groundwater within the Central Area, i.e., the area downgradient of the source area properties, contains a broad mix of inorganic and organic contaminants, including nitrates, sodium, chloride, barium, arsenic, chromium and lead, chlorinated organics consisting primarily of trichloroethylene and tetrachloroethylene, other volatile organics, poly-aromatic hydrocarbons (PAHs), and other semi-volatile organic compounds.

Because the Site is within the IWPA of a current drinking water supply, and also because the aquifer is medium and high yield, the Site Area aquifer is classified under the MCP as GW-1 meaning a current or potential drinking water source area. The one-mile diameter IWPA default zone supercedes any of the areas excluded as non-drinking water source areas under the MCP. The GW-2 classification applies to areas where there is potential migration of vapors from groundwater to occupied structures; specifically, where groundwater has an average annual depth of 15 feet or less and where the structure is within a 30 foot surface radius of that groundwater. Since much of the site is developed with commercial, industrial and residential structures, GW-2 potentially applies to the majority of the aquifer. An exception to the developed areas is the land surrounding the wells owned by the City that is vacant. Potential uses for this land are being examined under a Superfund Redevelopment Grant by the EPA. So far all of the plans created under the grant have included various scenarios of recreational use.

Lastly, at a minimum, all groundwater is considered as GW-3, which considers the ecological and human health impacts and risks associated with the discharge of groundwater to surface water. The aquifer discharges into the Aberjona River and its associated wetlands.

Considering these classifications, exposure scenarios for the groundwater risk evaluation should include, but not be limited to: ingestion and exposures from other domestic uses; inhalation of vapors from seepage into buildings; use of the water in industrial processes and other potential exposures to the use of the water in industrial and residential activities; worker exposure during excavation into groundwater; and exposures resulting from discharge to surface water.

Overall, the aquifer has significant current ecological value for its contribution to the River and the associated wetlands; however, the groundwater and the sediment of the River and its wetlands are contaminated. The full ecological value of the groundwater won't be realized until it and the sediment of the area have been remediated, which is most likely several years away. Its potential human value is significant, but only in the far future. In light of these and other criteria established in the MCP that were examined in this determination, the Department supports a medium use and value for the Site Area aquifer.

Groundwater Use and Value Considerations				
Factors	High	Medium	Low	Comments
1. Quantity	X			Aquifer is high-yield (1.75 million gal/day) The aquifer is alluvial, highly porous sand and gravel.
2. Quality			X	Aquifer is contaminated throughout (upper aquifer into the bedrock) with a broad variety of contaminants above drinking water standards. Many of the contaminants are organic and volatile and therefore are expected to eventually breakdown or volatilize upon eventually reaching surface water. Main sources of anthropogenic contamination of the aquifer appear to have been identified, and most are being or have been removed.
3. Current Public Water Supply Systems		X		There are two public supply wells on site. Both are inactive due to the presence of contamination. The City uses groundwater from another aquifer (Horn Pond Aquifer) and supplements the lost supply from Wells G&H with MWRA water. The City experiences regular water shortages and voluntary and required reduction efforts during the summer months.
4. Current Private Drinking Water Supply Wells			X	No known private drinking water wells within the study area. The City does not allow private wells to be tied into the municipal drinking water system at any point.
5. Likelihood and I.D. of Future Drinking Water Use		X		There are no other potential water supply development areas in the City that we are aware of. It is unlikely that the Wells G&H will be used in the near future, but possibly in the longer term as demand increases.
6. Other Current or reasonable Expected Groundwater Use(s) in Review Area		X		There are industrial wells used for processing and irrigation, and commercial wells also used for irrigation in the area. It is reasonable to expect similar uses to continue.
7. Ecological Value	X			Groundwater in the study area discharges directly to the Aberjona River.
8. Public Opinion		X		Public opinion has been opposed to utilizing the Wells G&H for water supply. The City has expressed an interest in having the source available for the future.

MA DEP - Bureau of Waste Site Cleanup

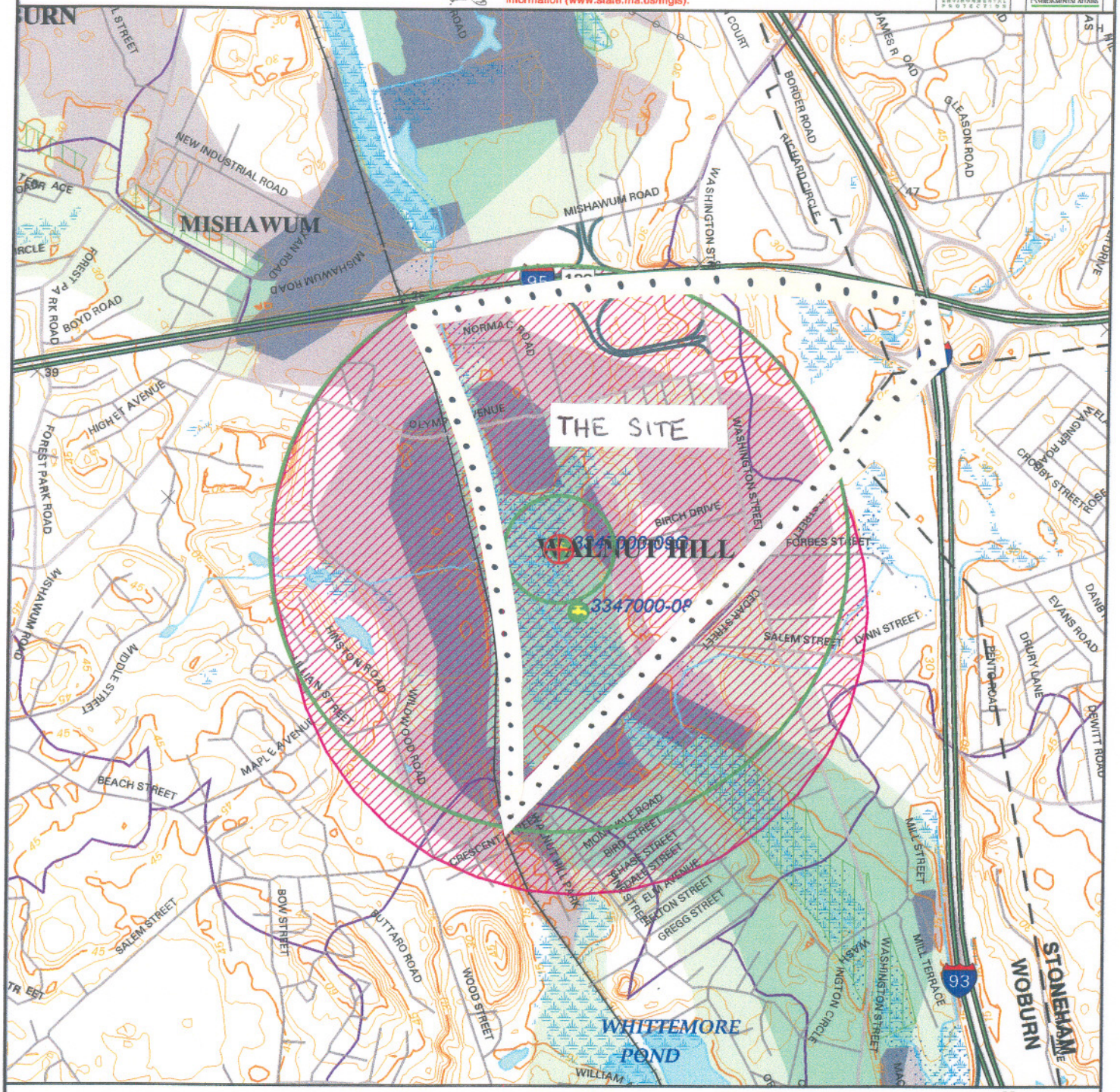
Site Scoring Map: 500 feet & 0.5 Mile Radii

SITE NAME:
Wells G and H Superfund Site RTN 3-0479
Aberjona River Valley
Woburn
916205n 230325ew

Site Location

The information shown on this map is the best available at the date of printing. Please refer to the MassGIS Website for data source information (www.state.ma.us/mgis).

MASS GIS — Massachusetts Geographic Information System — Massachusetts Executive Office of Environmental Affairs - 2003



Roads: Ltd Access, Divided, Other Highway, Maj Rds, Street, Trail
Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct
Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dams
Potentially Productive Aquifers: Medium,High Yield
Non-Potential Drinking Water Source Area: Medium,High Yield

EPA Sole Source Aquifer; FEMA 100-year floodplain
PWS: Ground,Surface,Emergency Surface,Non Community
Approved Zone2; IWPA; Surface Water Supply Zone A
Hydrography: Water Features,Public Surface Water Supply
Wetlands: Fresh,Salt,NHESP Wetlands Habitat
Protected Open Space; ACEC
DEP Permitted Solid Waste Facilities; Certified Vernal Pools

N W E S

SCALE 1:15000

0 1/2 MILES
0 1/2 KILOMETERS

August 05, 2003