COUNTY OF SUFFOLK

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DEPARTMENT OF HEALTH SERVICES

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Commissioner

February 1, 2012

SUFFOLK COUNTY DEPARTMENT OF HEALTH SERVICES GENERAL GUIDANCE MEMORANDUM #25 GUIDELINES REGARDING THE USE OF GEOTHERMAL WELL SYSTEMS

AUTHORITY

The use of geothermal systems may have the potential to adversely impact potable drinking water supply wells and the aquifers of Suffolk County, if not properly constructed or located. Some of these impacts may include thermal alterations of our aquifers, the introduction of microbial and other contaminants into our groundwater, or the potential for salt water intrusion near shoreline areas. In addition, the proximity of these systems to water supply and sewage disposal facilities can pose potential problems as a result of chemical compounds that may be used during routine maintenance, or when modifications are made to geothermal well systems. Therefore, pursuant to Article 6, §760-603 A.1-A.4, Article 4, §760-404 A.4, and Article 3, §760-306 of the Suffolk County Sanitary Code, the Suffolk County Department of Health Services (SCDHS) will review the location of geothermal wells to ensure that sewage disposal and water supply facilities are not impacted by the installation of these systems.

PURPOSE

This document outlines guidelines when geothermal well systems are proposed in conjunction with applications that are submitted to the SCDHS for the approval of sewage disposal and water supply facilities. However, this memorandum does not provide the requirements necessary for obtaining an approval to construct geothermal well systems. Please refer to the section titled "*Other Permits Required*" within this document for additional information.

GUIDANCE

Applications that are submitted to the SCDHS shall include site plans that show the location of all proposed geothermal well system components – including suction and dispersion wells, and the associated piping connecting these systems to the building(s) or dwelling. All site plans must include the separation distances between all geothermal system components and existing or proposed sewage disposal and water supply facilities, storm drainage structures, property boundaries, and utilities. It is recommended that geothermal well systems be designed by a licensed professional engineer or registered architect and be constructed in accordance with the International Ground Source Heat Pump Association (IGSHP) guidelines.

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In general, there are two (2) types of geothermal well systems - these include ***closed loop systems*** and ***open loop systems.*** Listed below are guidelines to follow when these systems are proposed:

- **Closed Loop Systems** - Typically consist of a series of pipes installed into either a bore hole or trench, extending into the earth, and connected to a heat exchanger system within a building or dwelling, thus forming a continuous "closed" system. These systems utilize a heat transfer fluid which circulates through the entire closed piping network to provide either heating or cooling. In addition, groundwater is not utilized or pumped through these types of systems.

    - *Heat Transfer Fluids* – Only food grade, FDA approved fluids may be used in these systems. Acceptable materials include mixtures of food grade propylene glycol and water, mixtures of potassium acetate and water, potable water, or other solutions approved by the New York State Department of Environmental Conservation (NYSDEC).

    - *Separation Distances – The following minimum separation distances between closed loop geothermal well systems and other structures shall be met:*

Table of Minimum Separation Distances
Closed-Loop Systems

Table of minimum horizontal separation distances from:	*Closed Loop Geothermal well systems (any portion)*
Sewage disposal system structures, e.g., septic tank, leaching pool	*25ft*
Private water supply well	*25ft*
Public water supply well	*100ft*
Storm water recharge structure, e.g., leaching field, drywell, unlined catch basin	*25ft*
Potential source of contamination, e.g., underground petroleum storage tank, chemical use and waste storage area, etc.	*25ft*
On-site Utility, sewage and Water Line, Lined Catch Basin	*10ft*
Building Foundation	*10ft*
Property line	*10ft*

- **Open Loop Systems** - A system in which groundwater is pumped through a series of pipes and a heat exchanger unit and is ultimately discharged back into the ground or an aquifer. These systems typically consist of one or more suction and diffusion wells that are used for both heating and cooling purposes. In general, all suction and diffusion wells must be screened within the same aquifer system and must meet the requirements outlined in this document.

  - *Separation Distances* – The following minimum separation distances between open loop geothermal well systems and other structures shall be met:

Table of Minimum Separation Distances
Open-Loop Systems

Table of minimum horizontal separation distances from:	*Open Loop Geothermal Well Systems*			
	Supply Well		*Return Well*	
	<45gpm	*>45gpm*	*<45gpm*	*>45gpm*
Sewage disposal system structures, e.g., septic tank, leaching pool	*50ft*	*75ft*	*25ft*	*50ft*
Private water supply well	*25ft*	*50ft*	*50ft*	*100ft*
Public water supply well	*100ft*	*100ft*	*200ft*	*200ft*
Storm water recharge structure, e.g.,leaching field, drywell, unlined catch basin	*25ft*	*50ft*	*25ft*	*50ft*
Potential source of contamination, e.g., underground petroleum storage tank, chemical use and waste storage area, etc.	*25ft*	*50ft*	*25ft*	*25ft*
On-site Utility, sewage and Water Line, Lined Catch Basin	*10ft*	*10ft*	*10ft*	*10ft*
Building Foundation	*10ft*	*10ft*	*10ft*	*10ft*
Property line	*10ft*	*10ft*	*10ft*	*10ft*

  - *Dual Use* – Suction or diffusion wells used as part of open-loop geothermal well systems shall <u>not</u> be utilized either permanently or intermittently as a potable water source.

- **Cross-Connection Control** - There shall be no cross connections between the potable water supply system and geothermal wells. All geothermal well system components shall be physically separate from potable water supply and plumbing systems, and piping used for geothermal systems shall be properly identified and labeled. Additionally, an approved backflow prevention device may be required by the appropriate water supplier when a facility is or will be served by a public water supply system.

- **Other Permits Required–** Applicants proposing the installation of geothermal well systems must obtain any necessary permits from the appropriate agencies. This includes the New York State Department of Environmental Conservation (NYSDEC), the United States Environmental Protection Agency (USEPA) and, if required, the appropriate town or village having jurisdiction. As a minimum, it is the applicant's responsibility to obtain the following approvals, as applicable:

  - *NYSDEC certification*: All applicants must apply to the DEC and obtain a permit, or well drillers completion report for each well installed, or borehole drilled.
  - *SPDES permits*: Geothermal open loop systems that have an estimated flow rate exceeding 1000 gpd and which serve commercial buildings, must obtain a SPDES permit from the NYSDEC.
  - *NYSDEC Division of Mineral Resources:* Geothermal systems that include well(s) drilled 500 feet, or greater, must obtain a permit from the DEC's Division of Mineral Resources.
  - *USEPA:* An applicant may be required to obtain a permit under the EPA's Underground Injection Control (UIC) program, depending upon the capacity of the geothermal system proposed

EFFECTIVE

This document is for guidance purposes only and becomes effective for all applications received after the date of this memorandum. This memorandum should apply to most cases, but it is not a standard and is not meant to substitute for the discretion of the reviewer. Additionally, it should be noted that the information contained in this guideline may be amended in the future as new information concerning geothermal well systems is discovered.

Signature on file

Issued by: Walter J. Hilbert, PE, Chief
Office of Wastewater Management

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