

**REGIONAL GROUND-WATER STUDY  
TOWN OF GREENVILLE  
ORANGE COUNTY, NEW YORK**

Prepared for  
Orange County Water Authority  
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### MAP

Groundwater Inventory Map ("GIM")

**REGIONAL GROUND-WATER STUDY  
TOWN OF GREENVILLE  
ORANGE COUNTY, NEW YORK**

**EXECUTIVE SUMMARY**

According to Town Supervisor Edmund Ardler (Ardler, 1993) and Town Engineer Pat Hines (Hines, 1993), there is no public water system or water district in the Town of Greenville.

There are two (2) private water systems in the Town of Greenville, serving the Castle High Mobile Home Park, and the Tri-States Mobile Home Park, according to the Orange County Health Department. Both water systems are supplied by low to moderate producing wells, and are designed to serve customers within each mobile home park. There is not significant capacity for either system to serve outside customers.

There are no other community water systems situated within the Town of Greenville, and no high producing community wells are known to exist. No significant sand and gravel aquifers have been defined in the Town of Greenville.

**INTRODUCTION**

The Orange County Water Authority retained Chumard & Associates to conduct a regional ground-water study for the Town of Greenville. The emphasis of Chumard & Associates' investigation was to:

- ! inventory existing and proposed municipal and community water supplies within the Town;
- ! determine the adequacy of existing and proposed water supplies and their ability to meet present and future demands;
- ! review zoning and land use; and
- ! review existing and potential ground-water contamination problems within the Town, which may effect existing and proposed water supplies.

There are no public water systems in the Town of Greenville, other than those serving two (2) mobile home parks.

**EXISTING WATER SUPPLY SYSTEMS**

There are no Town-wide water systems or water

districts within the Town of Greenville. The only community water systems are those serving the Castle High Mobile Home Park and the Tri-States Mobile Home Park. These are served by low to moderate producing wells, which are supplied by bedrock aquifers. The Town of Greenville does not maintain a water department or sewer department.

**Well Supply in Service**

There are no community wells, other than those incorporated into the private water systems serving the above mentioned mobile home parks. Those wells are briefly mentioned herein, in consideration of the absence of community wells on which to report.

The Castle High Mobile Home Park is served by four (4) wells, ranging in depth from 190 feet to 410 feet deep. All are supplied by bedrock aquifers. Yields range from 10 to 20 gpm (Orange County Health Department, 1993).

The Tri-States Mobile Home Park is served by one (1) well, drilled to a depth of 120 feet in bedrock. The reported yield is 35 gpm (Orange County Health Department, 1993).

**Well Supplies Not in Service**

There are no known community well supplies not in service.

**Proposed Well Supply Not in Service**

There are no proposed wells. It is noted that a number of test wells were drilled for the proposed Green Hills Subdivision, in the north-central section of the Town, along I-84. Some of these test wells reportedly produced up to 75 or 80 gpm (Hines, 1993).

**PROPOSED COMMUNITY WATER SUPPLY SYSTEMS**

Nine wells were drilled in March 1973 for the proposed Green Acres subdivision. The subdivision was never built, and the wells remain unequipped and inactive. Information about the wells is presented on Table 1 (Thompkins, 1994).

**WATER SUPPLY DEMAND**

Considering the absence of public water supply systems in the Town of Greenville, there is no available information on water supply demand.

### **Projected Water Demands**

There are no available projections for future water demands, since there is presently no public water system serving the Town.

### **GEOLOGY**

There are no defined sand and gravel aquifers of any significant size in the Town of Greenville. Frimpter (Frimpter, 1972), identified no significant sand and gravel aquifers in the Town of Greenville, although a large aquifer was identified in the Town of Minisink, east of Greenville. An examination was made of a map titled "Surficial Geologic Map of New York, Lower Hudson Sheet," compiled and edited by Donald H. Caldwell (Caldwell, 1989). The map indicates glacial till of various types throughout most of the Town, except along the Shawangunk Ridge. This material is generally relatively impermeable, and generally does not contain any significant sand and gravel aquifers. The Caldwell map also shows several small isolated Kame deposits, consisting of coarse to fine gravel or sand. Depending on their elevation, above or below the water table, these deposits do not necessarily indicate the presence of sand and gravel aquifers.

### **Bedrock Aquifers**

There are no significant defined bedrock wells in the Town of Greenville. There are isolated reports of private wells drilled that yield in excess of 25 - 30 gpm. An examination was made of a map titled "Geologic map of New York, Lower Hudson Sheet" by Fisher et al (Fisher, 1970). The map shows that most of the Town of Greenville is underlain by shale and graywacke of the Austin Glen Formation, from the Middle Ordovician period. While locally productive wells have been developed from this bedrock aquifer, insufficient information exists for the Greenville area.

The Shawangunk Ridge is underlain by the Bloomsburg Formation, from the upper Silurian period. Included are shale, sandstone, and conglomerate. No information on significant wells was uncovered in this study; however, springs and spring-fed ponds exist along the Ridge line, and many of them exhibit good flow characteristics (Ardler, 1993).

### **LAND USE**

The Town land use is predominantly residential, with relatively uniform distribution of population throughout the Town. There are no major population centers. There is relatively little commercial or industrial activity in the Town, although agriculture is found throughout the Town. Much of the area along the Shawangunk Ridge is undeveloped, except for the Lake Hathorne area. Furthermore, there is some limited development along the Greenville Turnpike and Route 6/84 as these roads traverse the ridge area (Space Track, 1993).

Presently there are no plans for the formation of a water district in Greenville, nor are there the concentrations of population compatible with the establishment of a Town water district. There are smaller concentrations of population, such as the Lake Hathorne area, which might possibly benefit from having a water district, but extensive further study would be required to explore the feasibility, including the existence of any nearby ground-water sources.

### **ALTERNATE COUNTY LANDFILL CANDIDATE AREAS**

Orange County has targeted several potential candidate areas throughout Orange County for further study in conjunction with possible future landfill development. Three of these areas, designated as L3, L4 and L5, are situated in the Town of Greenville. Area L5 is also partly situated in the Town of Minisink. Nine wells were drilled in area L4 in 1973 as part of the proposed Green Acres subdivision. Water yields from the wells ranged from 4 gpm to 85 gpm. All of the wells were completed in bedrock. No ground-water aquifers have been reported under areas L3 and L5.

All three areas are sparsely developed, with some agricultural activity noted. There are watercourses noted across portions of areas L4 and L5. Most of site L3 drains directly into two tributaries of Rutgers Creek, which extend into the site. Town Supervisor Ed Ardler reported that a recent site inspection showed that wet areas exist on all three sites (Ardler, 1993). Of course, extensive onsite exploratory testing would be necessary to determine further suitability of any of these sites.

## **WATER QUALITY**

In the absence of a public water supply system, there is little relevant information available regarding water quality. A review of Orange County Health Department records indicates that good quality water is produced by the wells serving the private water systems at Castle High Mobile Home Park and Tri-States Mobile Home Park. Sodium levels of 31 ppm were noted at Tri-States, and 32 ppm at Castle High. In other areas of the Town, residents report good quality water, with some instances of sulfide tastes (OCHD, 1993).

### **INVENTORY OF GROUND-WATER CONTAMINATION PROBLEMS**

#### **Existing Ground-Water Contamination Problems**

Chumard & Associates reviewed existing known ground-water contamination sites, including New York State Department of Environmental Conservation (NYSDEC) inactive hazardous waste sites, remediation projects (NYSDEC Spill Response), solid waste sites, and Resource, Conservation and Recovery Act (RCRA) sites for the Town of Greenville. The information for this review was provided by Lawler, Matusky and Skelly Engineers (LMS, 1993), who in turn obtained it following a Freedom of Information Law (FOIL) request to the NYSDEC. In reviewing the FOIL response from the NYSDEC, no sites were found that are known to have resulted in any ground-water contamination. However, according to Town Engineer Pat Hines (Hines, 1993), the Town has been monitoring private wells in the general area between County Highway 55, Greenville Turnpike, Mountain Road, and Route 6 for possible chloride contamination, from road salt storage. Several wells tested had chloride concentrations in excess of the maximum contaminant level (MCL) of 250 ppm. Household treatment systems have been installed in some of these residences.

In a separate incident, runoff from Route I-84 containing road salt may have been the cause of chloride contamination in private wells in the Firehouse Road area. Chloride concentrations from well water were measured to be in the range of 3000 ppm, according to Town Engineer, Pat Hines. The Thruway Authority has since installed a diversion channel to prevent runoff from discharging onto the

properties in question.

#### **Potential Ground-Water Contamination Problems**

Information about potential ground-water contamination sites was obtained from:

- ! FOIL request to NYSDEC (LMS, 1993); and
- ! Land use data from the Orange County, New York Real Property Tax Assessment data base (Space Track, 1993).

Three of the sites identified in the FOIL response should be regarded as potential ground-water contamination sites. They are listed below:

#### **Town Landfill**

The Town-owned landfill site off Spring Brook Road is 8.71 acres in size, although the area actually used for landfill is about three acres, according to a report titled "Closure Investigation Report for the Town of Greenville Landfill, Spring Brook Road, Orange County, NY" by Morris Associates (Morris Associates, 1993). Waste was accepted from the 1960's to December, 1991. Extensive well monitoring and onsite testing has not established that contamination of nearby private wells has occurred. However, overland seepage has been noted, and some of the onsite monitoring wells have shown evidence of local contamination. The report recommends that a formal closure plan be prepared.

#### **Dav-Mik, Inc. C.&D. Landfill**

No reports of any ground-water contamination were noted for this C & D site off Route 6.

#### **Waste Tire Storage - McComb Property**

No reports of any ground-water contamination were noted for this former tire storage site, near the intersection of Mountain Road and Route 6. The site has been cleaned up, and all tires removed.

In addition to the above mentioned sites contained in the FOIL response from the NYSDEC, it is noted that there are sewage disposal systems for Castle High Mobile Home Park and Tri-States Mobile Home Park.

#### **Castle High Mobile Home Park - Sewage Treatment**

According to the owner, Dr. Seymour Stern (Stern, 1993), there is a sewage treatment plant with a surface discharge of treated effluent. All treatment

standards and effluent parameters are being met, according to Dr. Stern.

**Tri-States Mobile Home Park - Sewage Treatment**

According to the owner, Beverly Walker, sewage treatment consists of septic systems, each of which serves two (2) mobile homes. The owner performs regular maintenance, and reports no problems with any of the systems that might cause ground-water contamination.

Each property in Orange County has a land use code number. Properties with land use code numbers associated with potential contamination of ground water were identified through analysis of the Real Property Tax Assessment data base by Space Track, Inc. The types of land uses in the potential contamination category include:

- ! industrial facilities;
- ! gas stations;
- ! dry cleaners, and
- ! auto repair facilities.

Where possible, approximate locations of these sites are shown as triangles on the GIM.

**Petroleum Bulk Storage**

The FOIL request from the NYSDEC inventoried one (1) petroleum bulk storage site in the Town of Greenville. This site is at the Town Highway Department on County Road 55; Table 5 also lists this site.

The above mentioned sites are listed as potential ground- water contamination sites. Further investigations would be required to determine if contamination exists at the respective locations.

**CONCLUSIONS**

There is no public water system or water district in the Town of Greenville. There is no information available to establish the existence and extent of any significant sand and gravel aquifers. Information was obtained about existing wells contained in the records of well drilling contractors who have worked in Greenville.

Available information from two (2) private water systems indicates that adequate supplies of good quality water are available for their water demands.

**REFERENCES**

Fisher, Donald, Y.W. Isachsen and L.V. Rickard, 1970, "Geologic Map of New York, Lower Hudson Sheet," New York State Museum and Science Service Map and Chart Series No. 15.

Frimpter, Michael H., 1972, Ground Water Resources of Orange and Ulster Counties, New York, U.S. Geological Survey Water Supply Paper 1985.

Lawler, Matusky & Skelly Engineers, October 1993, "Environmental Data Gathering for Community Consultants, Town of Crawford, File No. 677-001.

Caldwell, Donald H., 1989, "Surficial Geologic Map of New York, Lower Hudson Sheet," New York State Museum.

Morris Associates, 1993 "Closure Investigation Report for the Town of Greenville Landfill, Spring Brook Road, Orange County, New York."

Orange County Health Department files on water systems, including Castle High Mobile Home Park and Tri-States Mobile Home Park.

Verbal communications, August - November, 1993, Edmund Ardler, Town Supervisor, Town of Greenville.

Verbal communications, August - November, 1993, Patrick Hines, of McGoey, Hauser and Edsall, Town Engineers.

Verbal communication, November 1993, Dr. Seymour Stern, Owner, Castle High Mobile Home Park.

Verbal communication, November, 1993, Beverly Walker, Owner, Tri-States Mobile Home Park.

Verbal communications, June 1994, Mr. David Thompkins, well driller.

Space Track, Inc., 1993, "Orange County Landuse Maps."

**TABLE 1**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF GREENVILLE**  
**ORANGE COUNTY, NEW YORK**

**Summary of Available Well Data**

Well ----- Water District	Tax Lot #	Map Loca- tion ----- I.D. #	Well Status	Reported Yield (gpm) Original ----- Present	Depth of Well (feet)	Well Diameter (inches)	Length of Casing (feet)	Well Screen Length (feet) ----- Setting Interval (feet)	Aquifer	Date Drilled	Comments
No Wells ----- NONE											

gpm - Gallons per minute.  
 NA-Not available.

- Well Status:  
 In service active  
 In service-stand by  
 Inactive-equipped  
 Inactive-not equipped  
 Abandoned

**TABLE 2**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF GREENVILLE**  
**ORANGE COUNTY, NEW YORK**

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**Summary of Well Yield Capacities**

Well ----- Water District	WSA No. ----- Permitted Yield (gpm)	Average Yield Capacity (gpm) ----- (gpd)	Maximum Yield Capacity (gpm) ----- (gpd)	Comments
No Wells ----- NONE				
<b>TOTALS</b>	<b>(Total Permitted Yield)</b>	<b>(Total Yield Capacity)</b>	<b>(Total Maximum Yield Capacity)</b>	

gpm - Gallons per minute.

gpd - Gallons per day.

WSA No. - Water Supply Application Number.



**TABLE 4**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF GREENVILLE**  
**ORANGE COUNTY, NEW YORK**

**Project Water Demand**  
**1993 - 2020**  
**(mgd)**

Water District	Current Maximum Yield Capacity (mgd)	Current and Proposed* Maximum Yield Capacity (mgd)	1993 Projected Water Demand ----- Water-Supply Adequacy**	2000 Projected Water Demand ----- Water-Supply Adequacy** or ***	2010 Projected Water Demand ----- Water-Supply Adequacy** or ***	2020 Projected Water Demand ----- Water-Supply Adequacy** or ***
NONE						
<b>TOTAL</b>						

mgd - Million gallons per day.

\* Combined yield capacity of both current and proposed water supply(s).

\*\* Calculated by current maximum yield capacity minus projected water demands.

\*\*\* Calculated by current and proposed maximum yield capacity minus projected water demands.

+ Surplus water supply, mgd.

- Water supply deficiency (mgd).

**TABLE 3**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF GREENVILLE**  
**ORANGE COUNTY, NEW YORK**

**Summary of Water-Supply Source**

**Existing Source**

	<b>Water District</b>	<b>Ground Water (mgd)</b>
Current Average Daily Water Demand	NONE	
Current Maximum Daily Water Demand		
Maximum Yield Capacity		
Average Yield Capacity		
<b>Proposed Sources (Average Day)</b>		
<b>TOTAL MAXIMUM YIELD CAPACITY (MGD) =</b> -----		
<b>CURRENT MAXIMUM DAILY USE (MGD) =</b>		

mgd - Million gallons per day.

**TABLE 5**  
**REGIONAL GROUND-WATER STUDY**  
**TOWN OF GREENVILLE**  
**ORANGE COUNTY, NEW YORK**

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**Petroleum Bulk Storage Facilities**

<b>Facility Name</b>	<b>Location</b>	<b>Municipality</b>
Town/Greenville Highway Department	65 Orange County Rt. 55	Port Jervis