

# CONSTRUCTION MATERIALS

(2003)

## ■ INTRODUCTION

The primary source for identifying sand and gravel resources is the Soil Survey of Hillsborough County, which was completed in 1984<sup>1</sup>. The document includes a table entitled "Construction Materials," that lists four types of material by soil category; these are: roadfill, sand, gravel, and topsoil.

The purpose of this section of the Master Plan is to identify such materials as are located in Temple. The soil types are listed in tables and the boundaries of the soil units are illustrated on maps. These maps were created by the Southwest Region Planning Commission using computer technology known as the Geographic Information System (GIS).

A corollary purpose of this section is to determine whether reasonable opportunities exist in the Town of Temple for earth excavation as defined by RSA 155-E. Amendments made to this law in 1989 and 1991 made it incumbent on towns to ensure that their zoning ordinance provides some opportunity for excavation; otherwise "*excavation shall be deemed to be a use allowed by special exception . . . in any non-residential area of the municipality, . . .*"<sup>2</sup> and the zoning board of adjustment shall grant the special exception upon a finding by the board that the excavation would not diminish property values, unreasonably change the character of the neighborhood, create traffic hazards, or create any health or safety hazards.

## ■ THE SOIL SURVEY

The following descriptions and tables of the construction materials are based on the above-referenced Soil Survey of Hillsborough County. Soil categories are identified in the Survey by number and letter; the number represents the composition of the soil, and the letter designates the steepness - "A" being the flattest and "E" the steepest. (Note that the maps developed for this report show the soil unit boundaries but not the identifying number and letter, as the scale of the maps would render this information illegible.) The classifications used to designate the construction materials are based on a number of factors, including observed performance of the soil, soil properties, and site features that affect the removal of the material and its use as a construction material.

### DESCRIPTION OF MATERIALS

#### ◆ Roadfill

Roadfill is defined by the Survey as soil material that is excavated in one place and used in road embankments in another place. Only soils suitable for low embankments (less than six feet) were rated by the Survey. Roadfill is rated as being either "Good", "Fair" or "Poor". "Good" soils are those that are comprised of significant amounts of sand or gravel or both, and slopes of 15% or less. "Fair" soils have in excess of 35% silt and clay-sized particles, and slopes of 15-25%. "Poor" soils contain many stones, or slopes of more than 25%.

---

<sup>1</sup> Soil Survey of Hillsborough County, New Hampshire, Western Part, US Department of Agriculture, Soil Conservation Service, 1985. (The SCS is now the Natural Resource Conservation Service.)

<sup>2</sup> RSA 155-E: 4,III.

◆ **Topsoil**

Topsoil is defined in the Survey as material used to cover an area in order to establish and maintain vegetation. Temple has adequate topsoil to maintain vegetation.

◆ **Sand and Gravel**

Sand and gravel are defined in the Survey as natural aggregates suitable for commercial use with a minimum of processing. The Survey evaluated only the probability of finding materials in quantities large enough as to be suitable for removal. The properties used to evaluate sand and gravel soils include the thickness of the material, the size of the grain, and the content of rock fragment. A soil rated as “probable” has either a layer of clean sand or gravel, or a layer of sand or gravel with up to 12% silty fines. In addition, the material must be at least three feet thick and have less than 50%, by weight, large stones.

■ **CONSTRUCTION MATERIALS IN TEMPLE**

The following descriptions of construction materials in Temple do not include topsoil, as no significant amount of this material was identified in the soil survey. Note that the acreage calculations for these materials do not denote the amount of the resource in the ground - only the surface area; more extensive testing would need to be done to develop an estimate of the volume of materials present in any given area.

**Roadfill**

Table #17 lists the soil units found in Temple that constitute roadfill; the Roadfill Map illustrates their locations. According to this information, Temple has 7,347 acres of roadfill; just slightly over half of this acreage is rated as “fair”, the remaining 3,297 acres are “good” soils. The accompanying map identifies only the good and the fair soils.

**TABLE #17:  
ROADFILL SOILS IN TEMPLE**

SOIL	SOIL NAME	ACRES
<b>FAIR ROADFILL</b>		
22A,B,C	'COLTON'	541.489
613A,B	'CROGHAN'	102.912
76B,C,D 77B,C	'MARLOW'	2243.479
78B, 79B,C	'PERU'	804.537
104	'PODUNK'	39.530
558B,559B,C	'SKERRY'	217.887
<b>Total Fair Roadfill</b>		<b>3949.834</b>
<b>GOOD ROADFILL</b>		
36A,B,C	'ADAMS'	61.340
142B,C 143B,C	'MONADNOCK'	3231.198
101	'ONDAWA'	4.392
<b>Total Good Roadfill</b>		<b>3296.930</b>
<b>Grand Total all Roadfill Soils</b>		<b>7346.764</b>

SOURCE: SOIL SURVEY OF HILLSBOROUGH COUNTY, NEW HAMPSHIRE, US DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1989

**TABLE #18:  
SANDY SOILS IN TEMPLE**

SOIL	SOILNAME	ACRES
22A,B,C	'COLTON'	541.489
613A,B	'CROGHAN'	102.912
104'	'PODUNK'	39.530
558B.559B,C	'SKERRY'	217.887
36A,B,C	'ADAMS'	61.340
142B,C 143B,C	'MONADNOCK'	3231.198
'101'	'ONDAWA'	4.392
36E	'ADAMS'	16.773
395	'*CHOCORUA'	76.148
22E	'COLTON'	53.664
143D	'*MONADNOCK'	1371.933
214A,B	'*NAUMBURG'	113.159
105	'*RUMNEY'	63.611
15	'*SEARSPORT'	12.227
		1707.515
<b>Grand Total</b>		<b>5906.263</b>

SOURCE: SOIL SURVEY OF HILLSBOROUGH COUNTY, NEW HAMPSHIRE, US DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1989

\* HIGH PROBABILITY OF HYDRIC SOILS-WOULD NEED A PERMIT TO DREDGE AND FILL.

Roadfill soils are distributed virtually all over town, with a few notable exceptions being the northern and eastern sections of town.

**Sand**

Sandy soils in Temple account for about 5,906 acres. These deposits are distributed throughout most of the town, but with several large areas of town devoid of this resource.

**Gravel**

Gravel deposits in Temple are distributed in much the same pattern as sand, although to a lesser degree. Overall, the probable resource amounts to just over 2,000 acres (see Table #19).

The percentage of the total land area in Temple accounted for by each of the construction materials is presented below in Table #20. Note that the area in acres of the individual soil types exceeds the estimated land area of Temple; this is because several of the soil types overlap. The accompanying maps identify only the probable sources of sand and gravel.

Thus, according to the county soil survey, about 80% of the town is comprised of roadfill and sandy soils; gravel accounts for less than 15% of the land area.

**TABLE #19: GRAVEL SOILS IN TEMPLE**

<b>SOIL</b>	<b>SOILNAME</b>	<b>ACRES</b>
22A,B,C	COLTON'	541.489
104	PODUNK'	39.530
558B 559B,C	SKERRY'	217.887
101	ONDAWA'	4.392
22E	COLTON'	53.664
143D	MONADNOCK'	1371.933
105	*RUMNEY'	63.611
	<b>Grand Total</b>	<b>2292.506</b>

SOURCE: SOIL SURVEY OF HILLSBOROUGH COUNTY, NEW HAMPSHIRE, US  
 DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, 1989  
 \* HIGH PROBABILITY OF HYDRIC SOILS-WOULD NEED A PERMIT TO DREDGE  
 AND FILL.

**TABLE #20:  
LAND ACREAGE BY CONSTRUCTION MATERIAL**

Construction Material	Acres	% of Total Acreage of Construction Material
Roadfill, Fair	3,949.83	25.6%
Roadfill, Good	3,296.93	21.3%
Sand, Probable	5,906.3	38.2%
Gravel, Probable	2,292.5	14.8%

## ■ GROUNDWATER IDENTIFICATION

To further refine the attempt to identify sand and gravel deposits in the Town of Temple, aquifer delineation studies are examined and compared to the SCS soil survey. Inclusion of this information is useful, since the identification of potential groundwater is based in part on the inferred presence of sand and gravel soils - thus, the interpretation that where an aquifer exists, so too, do sand and gravel deposits. Groundwater identification should not, however, be solely relied upon to locate sand and gravel deposits, as these data present only part of the total picture.

The reason for this is that sand and gravel deposits were created by glaciers and rivers, and can be deposited on valley floors, hillsides and hilltops. The aquifer studies identify those soils that were deposited on valley floors - known as stratified drift. The other formations that must also be considered are eskers and deltas, both of which can be prodigious sources of sand and gravel deposits, which are not found in valley floors, but rather on hillsides and hilltops - therefore, they would not show up on an aquifer map. These formations all have something in common, namely that the materials have all been sorted by water; however, while good aquifers are also good sand and gravel sites, good sand and gravel sites are not always good aquifer sites.

The *Aquifers, Hydric Soils & Wetlands Map* found following page 59 illustrates the stratified-drift aquifer boundaries for Temple. Aquifer deposits exist virtually all over town except along the western boundary, which is of course the Wapack Range. The largest single concentrated deposit is in the southern part of town, from Fish Road to Hadley Highway. Note that the aquifer information and the soils information differ in that the pockets of construction materials are identified in many scattered areas around town that do not appear to have aquifer deposits. Overall, the areas associated with aquifers are much smaller than those associated with any of the construction materials.

## ■ EXCAVATION OPERATIONS IN TEMPLE

As part of this chapter, information on all known existing and abandoned sand and/or gravel pits in town was collected from town records. The locations of these operations are identified on the accompanying map. According to the town records, there are 36 excavation sites in Temple, of which only two are active, two have been reclaimed as house sites, and four have been restored through natural vegetation. The active sites are as follows:

<u>Tax Map/Lot #</u>	<u>Owner</u>	<u>Acres</u>	<u>Location</u>	<u>Use</u>
01-005	Robbins	2½ acres	Converse Road	Gravel, Sand, Fill
05-009	Wegmueller	2 acres	West Road	Sand, Fill

■ **OPPORTUNITIES IN TEMPLE FOR EXCAVATION**

RSA 155-E requires towns to allow some opportunity for earth excavation, as described in the Introduction. The law also allows towns that have adopted a Water Resource Management and Protection Plan consistent with RSA 674:2,VIII to include in their local excavation regulations provisions that are aimed at protecting water resources. The information depicted on the soil maps enables the Planning Board to do just that.

The Temple Zoning Ordinance provides for excavation as a special exception use, subject to certain conditions set forth in the ordinance. No district is specified; therefore this use could presumably occur anywhere in town, although clearly the special exception review process allows the Board of Adjustment to take into consideration abutting land uses, etc. The maps for Temple do indicate that these materials exist all over town; therefore, the zoning provision that allows excavation in all districts is, in fact, consistent with this soil information.

There appears to be an abundance of sand, gravel and fill in many areas of Temple, however land use commitments such as home sites, cemeteries and other uses limit availability, at this time only the two pits noted above are licensed and operating. The Wegmueller pit will probably run out of material within the next two years. The Robbins pit is scheduled to be reclaimed and closed by 2003.