C. TOPOGRAPHY/GEOLOGY/SOILS

1. Topography:

The Study Area lies in the Hudson River Valley between the Adirondack, Helderberg, and Berkshire Mountain ranges. It occupies part of a post-glacial dune field extending from Glens Falls to Delmar and lies over the ancient Lake Albany Plain which gave rise to what is now the Albany Pine Bush.

Terrain in the area is relatively level, ranging in elevation from 200 to 474 feet above mean sea level. The lowest elevations and steepest slopes are generally associated with the Mohawk River area, with elevations generally ranging from approximately 200 - 250 feet above mean sea level. Slopes range from approximately five - 15 percent with several small areas of slopes greater than 15 percent (Exhibit II-C-1). The highest point of the Study Area (elevation 500) is located immediately west of Denison Road in the northwest portion of the Study Area.

Albany County Airport elevations range from approximately 269 feet to 285 feet. Immediately surrounding the Airport, elevations range from 260 to 300 feet above mean sea level. North of the Airport, elevations gradually rise to approximately 300 feet at the Northway Exit 7 interchange. Elevations range from 200 feet to nearly 350 feet above mean sea level along Forts Ferry north to the Mohawk River and contain some of the steepest slopes within the Study Area.

The eastern and southern boundaries of the Study Area are relatively flat. Elevations are approximately 300 feet at most locations. Topography near the western border of the area is rolling, ranging from 300 feet near Central Avenue and New Karner Road to 450 feet along Vly Road.

2. Geology:

The subsurface geology of the Study Area consists of 7 primary geological units (Exhibit II-C-2). The units include bedrock, glacial till, stratified drift, lake clay and silt, windblown sand, floodplain deposits, and fill. Fill or man-made land is located in the confines of the airport. Bedrock underlying the entire Study Area is comprised of the Snake Hill Shale formation. This formation is primarily an impermeable shale, and has little value as an aquifer. Exhibit II-C-3 indicates depth to bedrock in the Study Area.

Overlying the bedrock is glacial till which consists of boulders, gravel, sand, silt, and clay. Till was deposited as ridges and drumlins in the Study Area. Specifically, the higher elevations west of the airport (Shaker Ridge) are part of the Hartsman drumlin field.

Stratified drift is found beneath the lake clay and silt layer and overlays either glacial till or bedrock. Aquifers are generally found in areas of the greatest thickness of stratified drift. The Airport is located on the Elsmere gravel blanket and Loudonville esker. Depth of the Loudonville esker ranges from 25 feet to 100 feet and yields a significant water supply which is tapped by the Latham Water District. The largest area of stratified drift is located north of Route 7 and west of the Northway (Exhibit II-C-2). Small pockets of this unit are also scattered primarily in the northern portions of the Study Area.

Lake clay and silt averaging 100 feet in thickness overlays the layers of sand and gravel. This impermeable layer was deposited during the period of ancient Lake Albany. A small layer of lake clay and silt is located south of the Mohawk River floodplain deposits. In addition, these deposits can be found in the northwest portion of the Study Area near Route 7 and the Northway.

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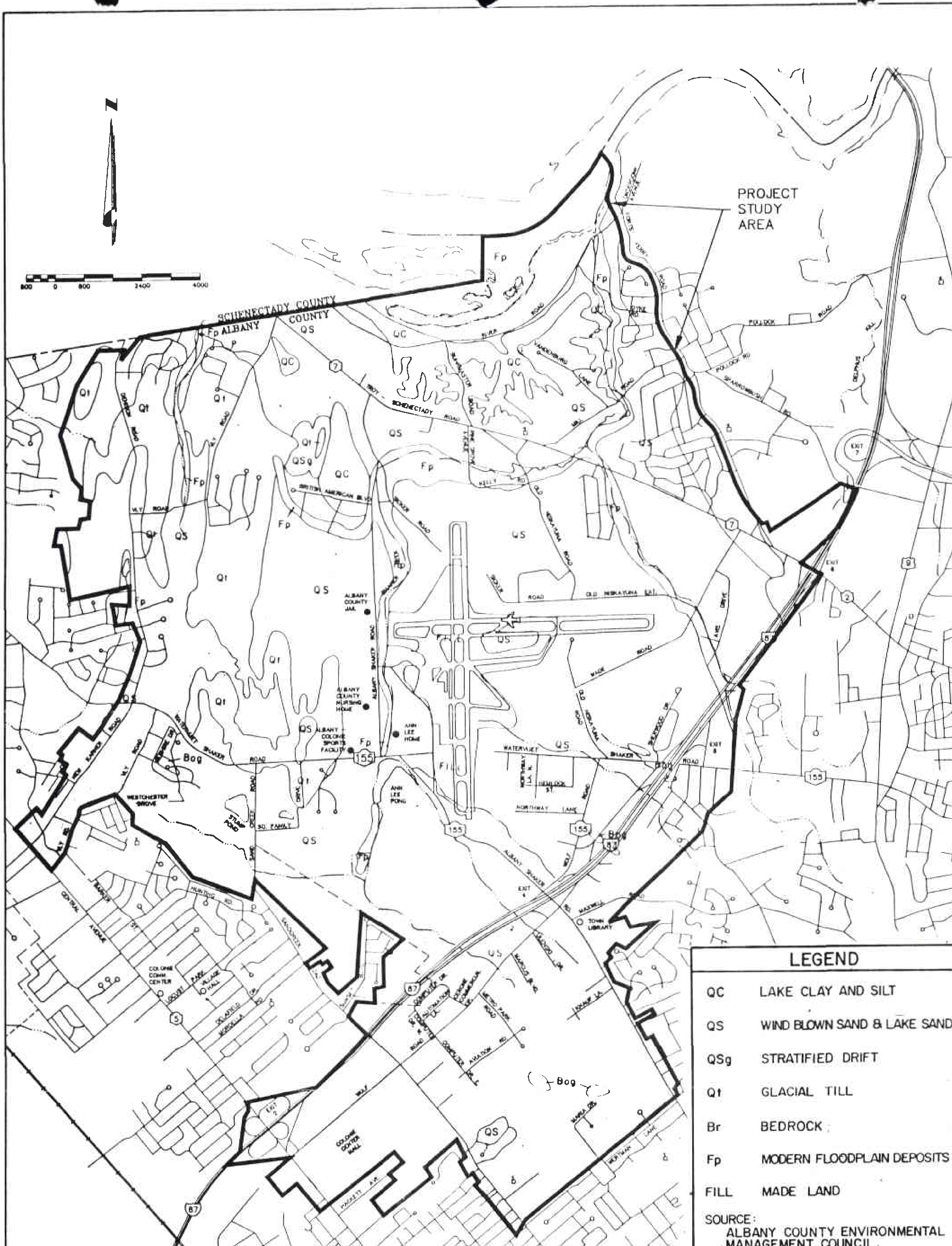
SLOPES MAP

EXHIBIT NO. II - C - I

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



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SURFICIAL GEOLOGY

EXHIBIT NO. II - C - 2

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

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DEPTH TO BEDROCK

EXHIBIT NO. II - C - 3

AIRPORT AREA GENERIC
ENVIRONMENTAL IMPACT STATEMENT

A 25 to 50-foot layer of wind blown sand lies beneath the floodplain deposits. This layer of sand originated after Lake Albany receded and the action of wind erosion formed sand dunes in the lake bottom deposits. These deposits are highly permeable and may contain large quantities of groundwater in their thickest portions. Wind blown sand is the most common of the geologic units in the Study Area. This unit surrounds the airport and is also found east of the Northway and north of Route 7 (Exhibit II-C-2).

Floodplain deposits approximately 25 feet deep are found under the airport proper. This layer of sand, silt and gravel is found in the vicinity of the Shaker Creek stream corridor and floodplain. In addition, floodplain deposits are found at the northern edge of the Study Area along the Mohawk River.

3. Soils:

A variety of soils exists within the Study Area (Exhibit II-C-4). Descriptions of these soil types are found in Appendix 2. These soils have been deposited here as the result of geologic actions surrounding the formation of ancient Lake Albany.

Properties of soil types such as depth to bedrock, depth to water table, drainage characteristics, permeability, as well as topography all influence slope stability. In order to assess slope stability in the Study Area existing bedrock elevation, soil type, and topography maps generated by the Town of Colonie Conservation Advisory Council (CAC) were reviewed.

Based on information from the U.S. Department of Agriculture, the CAC determined that the Hudson Association (#25) is the only soil association that is slippage prone. These slippage prone areas are delineated on Exhibit II-C-5. The largest such tract is located in the northeast portion of the Study Area near

Buhrmaster, Troy-Schenectady, and River Roads. This location represents an area of

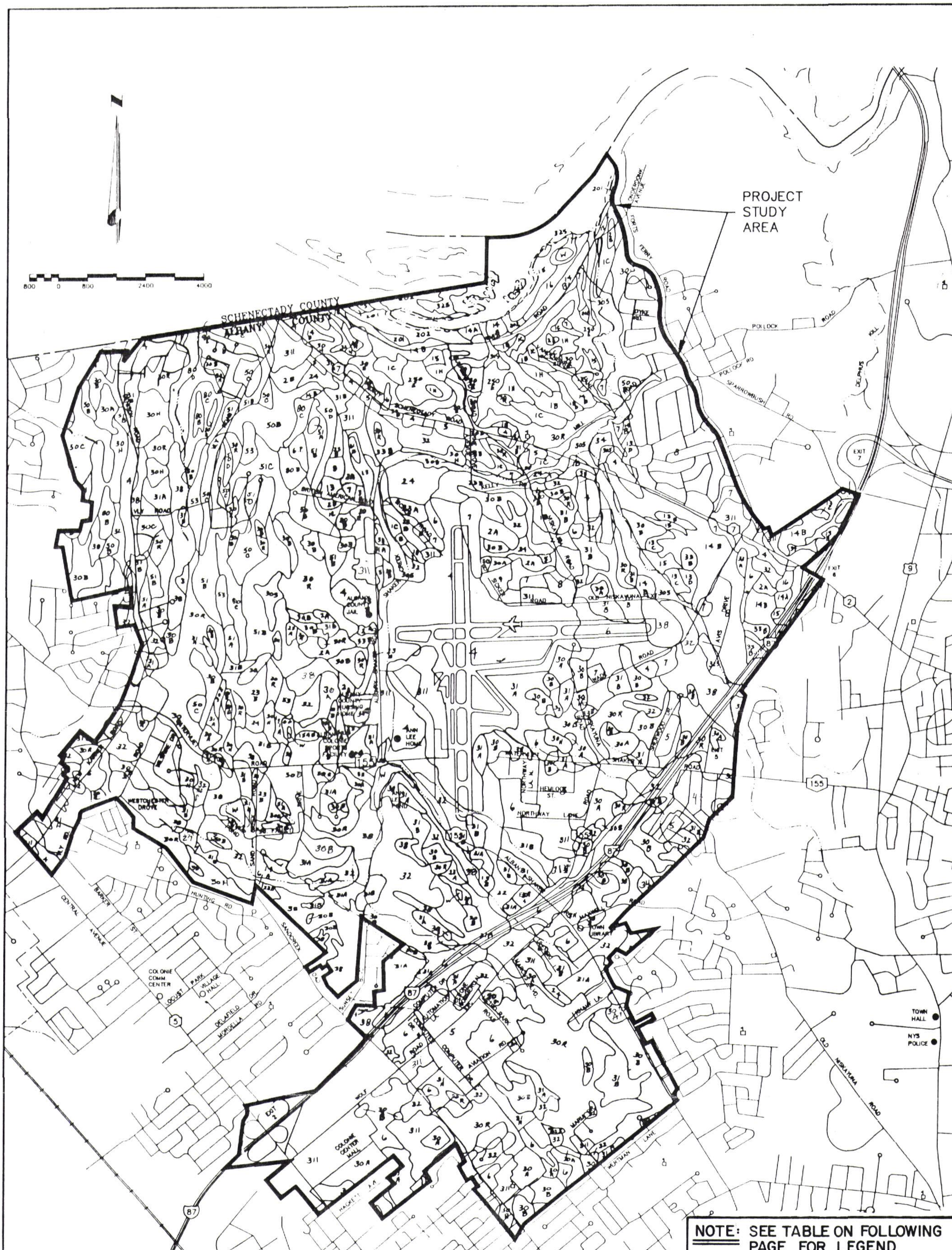
TABLE II-C-1

SOILS EXHIBIT LEGEND

MAP IDENTIFICATION NUMBER	SOIL TYPE	MAP IDENTIFICATION NUMBER	SOIL TYPE
1.	HUDSON	31.	ELNORA
2.	RHINEBECK	32.	STAFFORD
3.	MADALIN	33.	CLAVERICK
4.	COLONIE-URBAN	34.	COSAD
	LAND COMPLEX	38.	GRANBY
5.	URBAN LAND	50.	NUNDA
	COLONIE COMPLEX	51.	BURDETT
6.	UDIPSAMMENTS	53.	ILION
7.	UDORTHENTS	80.	VALOIS
8.	UDORTHENTS-URBAN	154.	CHENANGO
	LAND	171.	RIVERHEAD VARIENT
9.	URBAN LAND COMPLEX	201.	TEEL
13.	UNADILLA	202.	WAYLAND
14.	SCIO	230.	CARLISLE MUCK
15.	RAYNTHAM	250.	HUDSON
16.	BIRDSALL	305.	FLUVAQUENTS
23.	ELMWOOD	311.	URBAN LAND
24.	SWANTON	325.	MEDIHEMISTS &
30.	COLONIE		HYDRAQUENTS

MAP IDENTIFICATION LETTER	SLOPES
A	0-3%
B	3-8%
C	8-15%
D	15-25%
E	25-35%
AB	0-8%
H	HILLY
R	ROLLING
U	UNDULATING

SOURCE: TOWN OF COLONIE CONSERVATION ADVISORY COUNCIL
MAPPING AND USDA SOIL CONSERVATION SERVICE ADVANCE SOIL SURVEY



NOTE: SEE TABLE ON FOLLOWING PAGE FOR LEGEND

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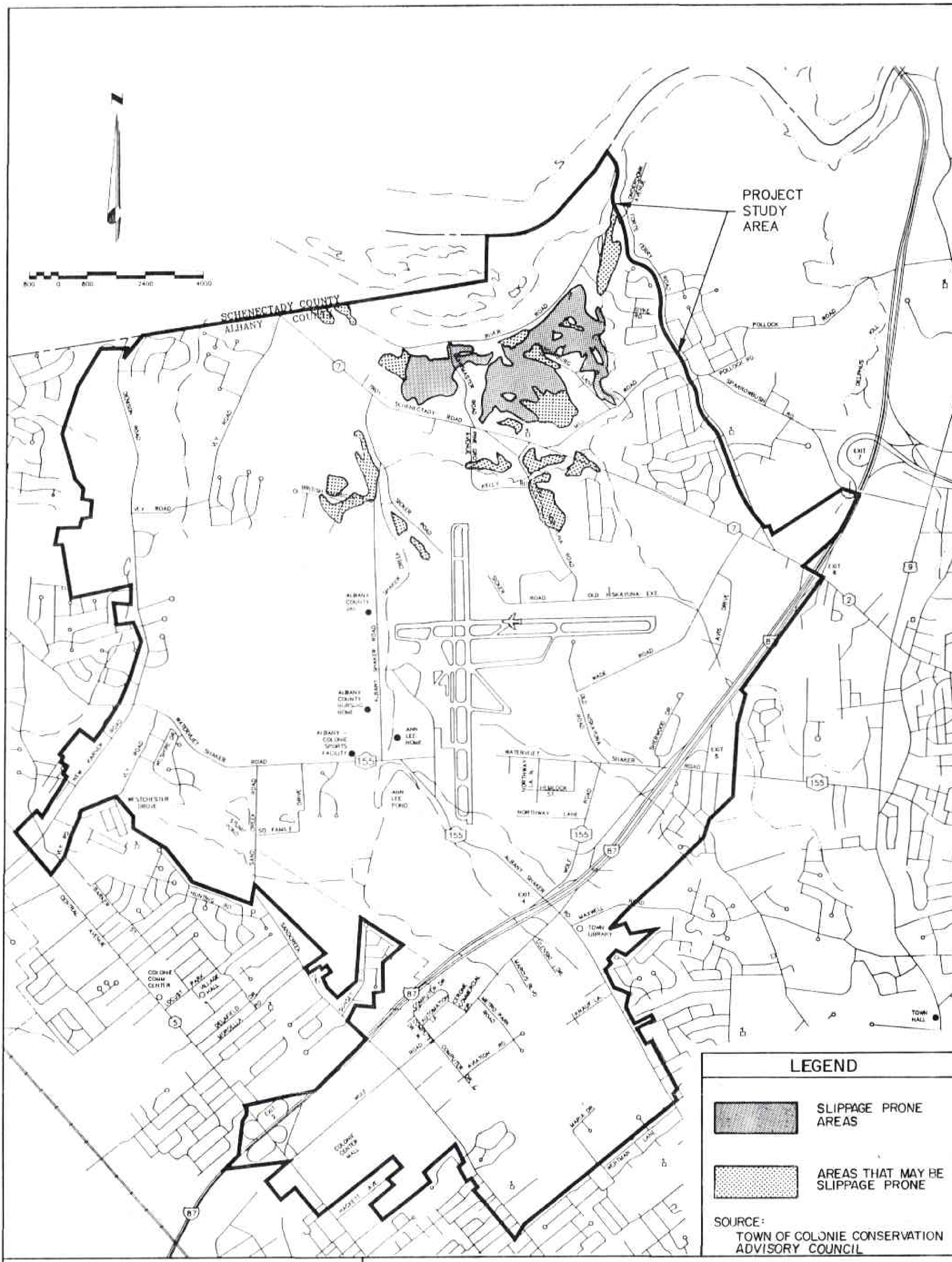
SOILS MAP

EXHIBIT NO.
II - C - 4

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT



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SLIPPAGE PRONE AREAS

EXHIBIT NO.
II - C - 5

AIRPORT AREA GENERIC ENVIRONMENTAL IMPACT STATEMENT

slopes greater than 15 percent. A small area that has been identified as possibly slippage prone lies immediately northwest of the airport near Sicker Road and British American Boulevard. Another possibly slippage prone area is located west of Niskayuna Road and south of Troy-Schenectady Road.

Impacts and Mitigation Measures:

Changes in land use resulting from projected development will have an impact on the topography, geology and soils of the Study Area. The flat to rolling topography will present few obstacles for construction as slopes are nearly all less than 15 percent. The removal of vegetation and the cut and fill operations associated with construction projects will, however, alter the terrain of the area and could potentially lead to soil erosion problems discussed later in this section.

In order to maintain the natural topography to the maximum extent possible, site plans should be designed to preserve existing vegetation and topography. This can be achieved through the use of cluster developments, the siting of recreational areas on lands which are unsuitable for building, and the sensitive development of site plans which preserve existing topography whenever possible. These techniques should be applied in the area north of Route 7, and to a lesser extent, to portions of land on the west side of the Study Area (generally those areas with slopes greater than eight percent as shown on Exhibit II-C-1).

Areas where depth to bedrock is less than 60 inches present several constraints for development. Although bedrock provides good support for foundations, the shallow soils may preclude the construction of buildings with basements or other underground facilities unless large quantities of fill are imported or blasting/ripping of bedrock is undertaken. In addition, the installation of septic systems or other utilities may be difficult as well as costly.

Depth to bedrock combined with topographic conditions and the type of proposed construction may require the removal of bedrock through blasting/ripping to reach final building and site elevations. Primarily, the major impact associated with removal of bedrock will be increased construction costs.

Blasting, when required for building, utility, or roadway construction, should be closely monitored by the appropriate municipality. Removal of bedrock by blasting, can result in the transmission of vibration through rock which can potentially damage nearby structures. It is recommended that each municipality require adherence to the United States Bureau of Mines blasting procedures established in Report of Investigations 8507, Structure Response and Damage Produced by Ground Vibrations from Surface Mine Blasting, in order to avoid or reduce vibration impacts to nearby structures and residents. These procedures include:

- Notification of residents prior to blasting;
- Pre-blast crack survey of nearby structures;
- Provision of public contact for information;
- Test blasts to determine amount of explosives required;
- Avoidance of surface (air) blasts; and
- Maintenance of a peak particle velocity of no more than 2 inches per second at structures of interest.

Construction activities normally require the removal of certain amounts of vegetation and soils on building sites. Stripping sites of vegetation, will often result in excessive erosion. This can create a problem on-site as well as to nearby streams, wetlands, and other surface water bodies. Several actions can be taken to mitigate these problems. To the maximum extent practical, natural vegetation should not be removed and should be augmented by promptly establishing grasses and other ground covers when disturbance occurs. For phased projects, ground disturbance activities should only be permitted on those portions of a site in which immediate construction activities are to commence, thereby reducing the potential for erosion. In addition, when work is proceeding adjacent to hillsides or streams, various measures should be implemented to protect these areas, such as silt fences, terracing, haybales, or other acceptable techniques as identified in The New York State Guidelines for Urban Erosion and Sediment Control published by the New York State Soil and Water Conservation Society.

Another condition which can create problems during construction is soils that contain high water tables or perched water tables. These water table conditions can create problems during excavation, with the construction of footings, foundations, and the installation of individual septic systems. Soils within the Study Area which may contain a perched or high water table during various times of the year include the Nunda, Burdett, Scio, Hudson, Valois, Raynham, Birdsall, Granby, Elnora, Stafford, Rhinebeck, Claverack, and Madalin soil groups. These soil locations are identified on Exhibit II-C-4.

To mitigate problems associated with a high or perched water table, the appropriate municipality could require that homes and businesses be constructed with proper foundation drainage in place to reduce the potential for wet or flooded basements. Conditions in some areas may warrant slab-on-grade construction. Wet soils create severe limitations for the proper installation of septic systems. However, it should be noted that centralized sewer service is readily available in most of the Study Area.

Soils with poor filtering capabilities present another potential problem regarding the installation of individual septic systems. Soils such as these allow the rapid passing of effluent thus reducing the effectiveness of biological treatment in the soil. Septic systems constructed in these soils could potentially cause groundwater contamination. Two actions can be taken to mitigate this problem. Suitable soils with good filtering capabilities can be imported to a site or the size of the leach field can be increased to reduce the effluent application rate within the soil. Excessively drained soils in the project Study Area include the Chenango and Colonie soil groups. Connection to existing sewer systems should be considered when construction is proposed in areas with these soil groups.

If future development should occur in areas that have been identified as slippage prone (Exhibit II-C-5), it is recommended that a complete, site-specific, slope stability analysis be performed which considers the proposed construction, grading plan, and existing topography. This analysis generally should include: test borings and/or test pits as required to define site-specific soil conditions, laboratory testing as required to determine the necessary soil parameters, and a calculation of the factor of safety against slope failure. Upon completion of the any slope stability analysis, a summary of recommendations should be prepared to outline limitations for site development on or near critical slopes.

Based on the results of similar slope stability studies in the Capital District, it is probable that general recommendations similar to the following would be made in the event of the development in or adjacent to the slippage prone areas shown on Exhibit II-C-5. It should be noted that these are not necessarily all the restrictions that would be imposed, but are presented to serve as representative of what could be required.

- No development of existing ground or removal of existing ground cover should be allowed below the top of any slope found to be potentially unstable;

- Site grading should be accomplished in such a manner to prevent the possibility of concentration of site drainage at the top of any potentially unstable slope. Underbrush should be cut to within 10 feet of the top of such a slope. Care must be taken in the development of lawn areas to prevent conditions at the top of a slope which might lead to concentration of drainage and development of erosion rills;

- All collected storm or foundation drainage should be directed to the bottom of all slopes in adequately designed and sized structures. In most cases, ditches or swales should be lined with crushed stone and/or rip rap;

- Site grading should prevent the impoundment or ponding of stormwater run-off to prohibit the infiltration of water into site soils. If recharge basins are found to be required for a specific site, a detailed analysis of groundwater seepage from such structures as well as any impacts on adjacent slopes should be required;

- Earth fills should generally be limited to those for landscaping purposes only. Typically, earth fill should be allowed to within 10 feet of the top of a slope. Fill grading beyond this point should usually be limited to gently sloping grades away from the top of a slope. Maximum fill heights should be determined based upon additional analysis as previously described; and

- Typically, no structures or earth embankments should be constructed closer than 25 feet to the top of a potentially unstable slope. This restriction should be specifically reviewed for each slippage prone area by additional slope stability analysis including soil testing, based upon in situ soil strengths.

Utilizing the steps described above, and requiring site specific slope stability analyses for areas with a high potential for slope failure, will result in site plans that mitigate or avoid areas which have unstable slopes. As a result structures as well as soils and streams will be protected.