DEVELOPMENT IN THE ADIRONDACK PARK

OBJECTIVES AND GUIDELINES FOR PLANNING AND REVIEW

BY

ADIRONDACK PARK AGENCY

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CONTENTS

Page

INTRODUCTION iv

SECTION I. Resources

Acoustic Environment ..... 1 -1

Aesthetics
A. General 2A-1
B. Scenic Vistas 2B-1
C. Travel Corridors 2C-1

Air Quality ..... 3 -1

Adjoining and Nearby Land Uses
A. General 4A-1
B. Adjacent State Land 4B-1

Aquatic Communities ..... 5 -1

Fragile Ecosystems at Higher Elevations ..... 6 -1

Ground Water ..... 7 -1

Historic Sites ..... 8 -1

Mineral Resources ..... 9 -1

Open Space
A. General 10A-1
B. Outdoor Recreation 10B-1

Shorelines .....11 -1

Special Interest Areas .....12 -1

Soils
A. General 13A-1
B. Agricultural 13B-1

Surface Waters
A. Water Quality and Eutrophication 14A-1
B. Surface Drainage 14B-1
C. Flood Plains 14C-1

Page

Terrestrial Vegetation
A. General.....15A-1
B. Rare and Endangered Species.....15B-1
C. Productive Commercial Forest Land.....15C-1

Terrestrial Wildlife
A. General.....16A-1
B. Rare and Endangered Species.....16B-1

Topography.....17 -1

Wetlands.....18 -1

Wild, Scenic and Recreational Rivers.....19 -1

SECTION II. Development Activities

Noise.....20 -1

Pesticides and Herbicides.....21 -1

Sewage Disposal..... **Revised 3/25/91**.....22 -1

Shoreline Development.....23 -1

Signs.....24 -1

Siting and Construction of Buildings.....25 -1

Solid Waste Disposal.....26 -1

Storm Drainage.....27 -1

Streets and Roads.....28 -1

Utilities.....29 -1

Water Supply.....30 -1

SECTION III. Economic and Governmental Considerations

Economic Impact
A. Economic Benefits and Costs.....31A-1
B. Government Service and Finance.....31B-1

Governmental Regulations.....32 -1

REFERENCES

APPENDICES

Fragile Ecosystems at Higher Elevations A

Conservation Plantings on Critical Erosion Areas B

Timber Harvesting Guidelines for New York C

Rare and Endangered Wildlife Within the Adirondack Park (As classified for New York State) D

Economic Impact Analysis E

Legal Basis for this Document F

Adirondack Park Agency Soils Handbook (August 1990) G

INTRODUCTION

PURPOSE

This is a reference document which provides guidance for both the planning and review of proposed development projects on private lands within the Adirondack Park. Specifically, it sets forth criteria for the design and evaluation of projects (new land uses, development or subdivisions) and suggests methods for enhancing the Park's natural, social and economic environment. It should be particularly useful in dealing with subdivisions involving five or more lots.

AUDIENCE

THIS publication is for use by:

1. Individuals, Project Sponsors, and Consultants seeking information on project-related performance standards and design criteria used by the Adirondack Park Agency and, in some instances, by other State agencies and local governments.

2. Local governments involved in land use planning concerned with regional and local project review.

3. The Adirondack Park Agency and other New York State agencies with responsibilities for reviewing projects in the Adirondack Park.

BASIS

The document is based on the Agency's experience in project review, consultation with local, state and federal government officials and with professionals working in a variety of land use-related disciplines. In many cases, standards used in the Park by other State agencies have been incorporated by reference.

The objectives and guidelines incorporate specific requirements of the Adirondack Park Agency Act (e.g., shoreline setbacks), as well as general planning recommendations. Specific standards of the Act have been designated as such in the text.

HOW THIS DOCUMENT IS ORGANIZED

Forty-three individual topic headings are grouped into three sections: (I) Resources, (II) Development Activities,

and (III) Economic and Governmental Considerations.

The Resource section (I) addresses various natural, scenic, historic, and cultural resources and considers their sensitivity to development. The Development Activities section (II) describes how a project sponsor (big or small) can protect resource values and prevent undue adverse impacts. The Economic and Governmental Considerations section (III) deals with the economic implications of projects.

Each topic contains four main headings: The Objective defines the goal to be achieved through project design and construction; the General Guideline explains generally how to achieve the goal; the Description defines or describes the topic and the Further Guidelines elaborate upon and expand the General Guideline. Individual sections will be revised and updated as required and will be available for inclusion in this document.

The pages of this document are bound in a looseleaf manner to make it easier to extract and reproduce individual topics (e.g., "Streets and Roads") for those interested in particular sections.

HOW TO USE THIS DOCUMENT

When planning or reviewing a project, the following procedure is suggested:

1. Identify Resources Which May be Affected

   Identify and review those topics dealing with listed Resources (e.g. Soils, Wildlife, Scenic Vistas) which exist on the project site, or those upon which the project can be expected to have an impact. The presence of many of these resources can be identified by consulting maps in town offices or at the Agency headquarters in Ray Brook. Visits to town offices also provide an opportunity to discuss local concerns and legal requirements with town zoning officials.

2. Identify the Proposed Activities

   Identify and review the Development Activities (e.g., Sewage Disposal, Signs, Siting and Construction of Buildings) which may be components of the contemplated project.

3. Refer to Additional Related Topics

Refer to any additional sections, references, or appendices which may be noted in the topics studied under the above process.

By using this procedure, and following the applicable objectives and guidelines, a project sponsor can expect to facilitate Agency review of his project. Final determinations are based on careful case by case evaluations.

The following topics are interrelated and thus a certain amount of duplication in unavoidable. Since the objectives are designed to emphasize the value and protection of different resources, one must weigh the relative importance of the resources with which his project is involved when deciding upon the application of conflicting objectives.

The objectives and guidelines were developed to protect the unique, often sensitive, resources of the Adirondack Park, and are not necessarily meant to apply to projects in other areas of the state.

CONSULTATIONS WITH REVIEW PERSONNEL

Meetings involving the project sponsor or his consultants, local officials, and Agency staff members are extremely helpful. Such meetings should be held in the preliminary stages of project planning.

The objectives and guidelines should be used in conjunction with such meetings. Agency staff should be freely consulted for further information.

APPLICATION OF OBJECTIVES AND GUIDELINES IN PROJECT REVIEW

These objectives and guidelines are generally applied by the Agency in evaluating projects. They will help to assure consistency in the review process. Their use should be flexible enough to allow individual and professional creativity in the design of projects. Even though a project proposal may vary from the guidelines for development activities, the project will be approvable if it can be shown that no undue adverse impacts will result.

It should be emphasized that an entire section is devoted specifically to economic issues, and that benefits to the local and regional community are given full and careful consideration.

SECTION I

RESOURCES

OBJECTIVES AND GUIDELINES

ACOUSTICAL ENVIRONMENT

Objective: Maintain an acoustical environment which is compatible with the public health and welfare and the public enjoyment of it, economic development, the propagation and protection of fauna, and the protection of physical property and other resources.

General Guideline: Assess the nature and quality of the existing acoustical environment and take whatever reasonable measures are necessary to maintain or enhance it; maintain natural buffers such as existing topographic relief and vegetation; use noise abatement equipment; adhere at a minimum to applicable governmental noise level standards.

Description:

Acoustical environment refers to the sounds associated with the forest or other natural areas and man-made sounds in and around populated areas. In comparison to cities, the majority of the unpopulated areas in the Adirondacks are quiet, an important resource value. These areas are quite sensitive to the sounds coming from most developments, while populated areas are less sensitive. Many tourists seek the natural sounds as relief from their noisy environments. Park residents likely associate man-made sounds with social and economic development.

Further Guidelines:

1. Development should at a minimum comply with the standards of the Federal Occupational Safety and Health Act (OSHA), and local noise ordinances. OSHA regulates noise levels in working areas only, and does not provide community protection.

2. A survey should be performed identifying the nature of existing sound sources and sensitivity to development of the local acoustic environment.

3. Minimize increases or adverse changes in the nature of sound levels as they would be heard at acoustically sensitive sites such as hospitals, nursing homes, schools,

residences, libraries, religious facilities, open space areas where tranquillity should be maintained and others.

4. Procedures for measuring existing sound sources, and interpreting the data are contained in the Department of Environmental Conservation's Policies and Procedures Manual, Title 4600, Sound and Vibration Control.

5. See the Further Guidelines under Topic 20: "Noise".

AESTHETICS

A) GENERAL

Objective: Preserve and enhance the character and scenic qualities of the project site and its environs.

General Guideline: Utilize existing vegetation and topographic features to harmonize development with the natural and cultural character of the landscape in which the project is proposed (e.g., forested, open field, river valley, farmland, village). Employ sensitive design and siting methods to blend development with the surrounding landscape thereby minimizing adverse visual impacts. Achieve architectural compatibility with nearby high-quality architecture.

Description:

The Adirondack Park possesses a visual character and exceptional natural beauty unique to New York State. Its landscape, composed of mountainous forested terrain interspersed with pristine lakes and rivers, as well as scattered low density development and small villages, is highly valued by both full-time residents and seasonal visitors. New development alters this landscape in ways that may either complement or impair the Park's character and scenic quality. Projects that are located and designed in harmony with natural and cultural features will complement the Park; if built without regard to their surroundings, they will adversely alter the Park's character and diminish its scenic quality.

Scenic quality is a term which refers to the general visual character of an area. To many people, the visual impression gained from the landscape is the primary determinant of the quality of the environment. Any landscape may be broken into component parts. Components of the landscape such as buildings, roadways, powerlines, signs, trees, meadows, mountains, valleys, and waterways, all contribute to the visual character and quality of any given area. The variety, scale, uniqueness, texture, height, size and shape of these components all contribute or detract from the scenic quality of that area.

To determine the compatibility of a proposed project with the character of any given area, the existing character must first be defined. Within the Adirondack Park, several landscape character types may be identified. Guidelines for development are associated with each character type.

Hamlet Character - Typified by the visual dominance of existing structural development on small lots, signs and manipulated landforms. These areas generally lie adjacent to State or County highways. Occasional views to surrounding natural landscapes can provide a sense of open space within these areas.

New development should enhance the particular Adirondack character of the village. Careful design, siting, and use of natural building materials and landscaping with native plant materials will enhance that character. See also Section II, topic 24: "Signs".

Hamlet Approach Character - This landscape, or townscape is typified by a codominance of man-made elements and open space. These areas are located primarily in highway travel corridors which approach hamlet areas. Man-made elements typically include single family dwellings on large lots and occasional commercial uses such as service stations, tourist accomodations, general stores and their associated signs and parking facilities.

New development should not promote a commercial strip character with large signs and distracting lighting.

Development should be interspersed with pockets of open space to break up the strip character. Landscaping and the use of natural building materials is encouraged. See also Section II, topic 24: "Signs".

Lake Character - This landscape includes those areas visible from lakes or their shorelines. Shorelines and steep slopes within one mile of lakes are those areas most vulnerable to aesthetic character change within this landscape type.

Lakes and their shorelines within the Adirondack Park are critically valuable visual resources.

Shorelines may accept development without diminishing the undeveloped appearance of the shoreline. By incorporating building setbacks, and through the use of existing and introduced native vegetation and natural building materials, development can be made to blend with the natural surroundings, while still offering opportunities for views of the lake from structures. See also Section I, topics 11 and 14: "Shorelines" and "Surface Waters" and Section II, topic 23: "Shoreline Development".

Lowland Valley Character - This landscape is characterized by flat or gently rolling terrain, having large forested and/or agricultural areas.

Development is easily absorbed in this landscape with little or no loss in scenic quality providing careful design, siting and landscaping methods are used in areas of high scenic quality such as areas adjacent to rivers.

Mountain Forest District - This landscape is characterized by undeveloped, inaccessible steep terrain and dense coniferous and/or deciduous growth.

Development should not be located on steep slopes or on ridge lines. Development proposed on highly visible slopes should leave in place as many trees downslope of the structure as possible to blend the development with the existing natural character of the hillside. See also Section I, Topic 17: "Topography".

Development need not, but may, alter the character of the above-described landscape districts. The following guidelines will aid in minimizing adverse visual impacts of development upon the character of the various districts.

Further Guidelines:

1. Site development so that it harmonizes with the existing landscape character type by using existing land forms and vegetation. Development in natural areas should blend into the landscape; development in hamlet areas should reflect their Adirondack character.

2. For highly visible undeveloped areas, structures should be sited in wooded areas rather than in open fields. Light colored or highly reflective materials should be avoided. In previously developed or in agricultural areas, natural building materials should be used.

3. In highly visible areas, such as hillsides, existing and introduced native vegetation should be used to blend the structure with the surrounding landscape while still providing a view from in the structure. Selective removal of vegetation will provide the opportunity to frame the view from the structure adding perspective and scale, much as a photographer or artist would do.

4. Buildings should not be silhouetted against the skyline. Buildings should be sited below the crest or ridge line of hills to preserve a natural topographic and vegetative profile.

5. Roads, utility rights-of-way and other linear alterations should follow topographic patterns, diagonally traversing slopes to avoid forms which tend to stand out against the rolling mountainous terrain of the Adirondacks.

6. Hillside cuts for roads or other site development in areas of high visibility should be stabilized and vegetated with native species to avoid highly contrasting unnatural landforms.

7. Avoid siting sand and gravel extractions in highly visible locations and, where this is impractical, use vegetative screening to minimize visual impacts.

8. Neon and flashing lights should be avoided where possible, especially in highly visible areas.

9. See additional guidelines under the following two sections.

AESTHETICS

B) SCENIC VISTAS

Objective: Maintain the scenic qualities of views from the vistas designated on the Adirondack Park Land Use and Development Plan Map and from those views designated by local communities on their land use plan visual analysis maps, where available.

General Guideline: Avoid intrusion of buildings and other development and land use alterations generally within views from vistas by using careful siting, design and landscaping methods.

Description:

A scenic vista is a distant view through or along an opening, especially a view which frames or focuses attention upon a scene of distinctive character and natural beauty such as a prominent landmark, a mountain, river valley, plain, or historical monument.

Vistas designated in the Adirondack Park Land Use and Development Plan are those from which extensive panoramic views of the natural beauty of the Park are seen. Locally designated vistas offer distinctive natural views of local rather than regional significance.

These views may be described by measuring the following dimensions: area, length and width of view, change in elevation, visible water area, water edge, man-made alterations or structures present, vegetational patterns, existing land uses, and the density and contrast between all of these dimensions.

Areas visible from vistas are categorized into foreground, middleground and background.

1. Foreground - 0-1/2 mile from viewer position
2. Middleground - 1/2-5 miles from viewer position
3. Background - greater than 5 miles from viewer position.

Development guidelines within vistas vary, dependent upon the location of proposed development within the view. Development may be visible from several different vistas.

Further Guidelines:

1. Determine whether proposed development would be visible from any vista. Determine in what area of the vista (i.e., foreground, middleground or background) development would be located.

2. Avoid placing development in the foreground area. If this is not possible, it should be completely screened using existing topography or native vegetation.

3. Development proposed in the middleground and background of vistas should be screened from view using existing topography and native vegetation.

4. Powerlines, roads and other linear intrusions should be avoided in the foreground area and screened from view using existing topography and native vegetation in middle and background areas.

5. Commercial advertisement should be avoided within the foreground and middleground views. Neon or flashing lights should not be visible within the foreground or middleground areas of regionally designated vistas.

6. See additional guidelines listed under Sections A and B B of this topic.

AESTHETICS

C) TRAVEL CORRIDORS

Objective: Preserve and enhance the character and scenic qualities of all travel corridors.

General Guideline: Employ natural vegetative screening, existing topography and careful siting methods to minimize the visual impact of buildings and other development and land use alterations.

Description:

A travel corridor is a strip of land or water constituting that area visible from natural and man-made transportation routes such as interstate, state, town, and county highways; boating ways; hiking and horse trails, and canoe routes. The primary manner in which both residents and visitors experience the Adirondacks is by using travel corridors. Development within these corridors should take place so that the open space character of the Park as viewed from the corridors is maintained. Rural Use areas and Resource Management areas are the primary open space areas of the Park. Maintenance of the existing character is most important in these areas. Development in Hamlet areas should enhance the Hamlet's Adirondack character.

The landscape visible from these corridors may be described using such dimensions as area length, and width of view, change in elevation, water area, water edge, man-made alterations or structures present, vegetation patterns, existing land uses, and the diversity of and contrast between all of these dimensions.

Further Guidelines:

1. Determine if proposed development will be visible from the travel route(s) and, if so, the distance from proposed development to such route(s).

2. Development proposed within travel corridors should be constructed in a manner which maintains the open space character of the Park, especially within Rural Use and Resource Management areas. Buildings should be placed back from roads to harmoniously reflect the rural character of the region.

3. Existing vegetation should be retained along roads in sparsely developed areas.

4. Siting of buildings placed within high-quality views or in the foreground view of travel corridors should utilize vegetational and topographic screening and landscaping techniques to minimize their intrusion on the character of the area.

5. Sand, gravel and other borrow pits and stockpiling areas should be located away from the viewshed of travel corridors unless they are effectively screened from view from the corridor.

6. Where physically possible, especially in areas of high scenic quality, utility companies should bury their telephone and electric transmission and distribution lines in highway rights-of-way.

7. If overhead utility lines are necessitated, they should be consolidated on a single pole and located so as to be screened from view or located to the side of the road having the lesser-quality view.

8. Potential views should be developed and used in plan development.

9. Long views created by the presence of open fields, especially in the vicinity of heavily wooded areas, should be protected. Development should be placed within wooded areas adjacent to open fields.

10. For areas of high scenic quality employ the guidelines which apply to foreground, middleground and background areas as described under Scenic Vistas in the previous section.

11. The shoreline cutting and building setback restrictions of Section 806 of the Adirondack Park Agency Act and the Wild, Scenic and Recreational Rivers Act should be complied with. In areas of high scenic quality additional screening may be necessary.

12. See also the guidelines under the previous two sections of this topic and guidelines under Section II, topic 24: "Signs".

AIR QUALITY

Objective: Maintain or enhance existing air quality.

General Guideline: Adhere to applicable governmental air quality standards; provide adequate air pollution abatement devices; and reduce dust levels caused by construction.

Description:

Air quality refers to the chemical, physical and aesthetic characteristics of the atmosphere. It is measured and expressed using such criteria as particulates, sulfur dioxide, carbon monoxide, hydrocarbons, and visibility.

Further Guidelines:

1. Minimize degradation of air quality at, and near, the project site, or at any location in the Adirondack Park.

2. At a minimum, the proposed action should comply with all Federal, State and local regulations, including the provisions of the following:

   a) National air quality standards adopted pursuant to the Federal Clean Air Act

   b) Federal standards of performance for new stationary air pollution sources. Among such sources which might be constructed in the Park are: steam generators, municipal incinerators, sewage treatment plants, batching plants, utility boilers, iron and steel plants, sawmills and papermills.

   c) Federal emission standards for hazardous pollutants

d) All rules and regulations enacted to implement the New York State Plan for achieving and maintaining air quality standards.[1,2]

3. Adequate air pollution abatement devices should be installed on construction equipment.

4. During dry periods, measures should be taken to reduce dust levels caused by construction activities. Dust from roads used by traffic associated with a development or industrial project should be controlled by watering, oiling, application of calcium chloride or other appropriate methods. Special measures should be applied where dust or other pollutants would adversely affect a special interest area, endangered plant community or other important natural area.

5. Locate areas of high traffic concentration such as heavily travelled roads and large parking areas (more than 25 spaces) and large commercial development away from areas sensitive to increased concentration of air pollutants (e.g., intensively used open space recreational use areas, wetlands, areas of high wildlife value, and others.)

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[1]For a further general discussion, see "Simplified Guide to New York State Air Pollution Control Rules and Regulations". 1974. N.Y. State Department of Environmental Conservation, Division of Air Resources. Albany, N.Y. 15 pp.

[2]Under this plan, the bulk of the Adirondack Park is classified as "Level I" for which air quality standards are most strict. Some of the Park's larger villages are classified "Level II". There are four defined levels: Level I is land "predominantly used for timber, agricultural crops, dairy farming, or recreation. Habitation and industry sparse." The installation, construction and operation of most sources of air pollution requires a permit from the Department of Environmental Conservation. The Department also regulates all outdoor burning.

ADJOINING AND NEARBY LAND USES

A) GENERAL

Objective: Minimize incompatibility of new development with the character of adjoining and nearby land uses.

General Guideline: Take into account the existing and potential land uses in the vicinity of the project site in determining what new land use activities are suitable for the project site; avoid new intensive development in open space areas; and avoid substantially altering existing residential and other land use patterns.

Description:

Adjoining and nearby land uses include those areas which may potentially be affected by new land use and development. The distance over which an effect will occur is dependent on the type and magnitude of change involved and the nature of the local environment.

Further Guidelines:

1. New industrial or large scale commercial development should not be located in areas that are presently residential or open space in character if such development would adversely affect the existing character of the area or the surrounding land values. Conversely, new residential development should not be located in or near industrial areas, if it would preclude or interfere with future industrial use of these areas.

2. Large developments of any type should be designed to protect the existing open space character of the surrounding area.

3. Local land use plans should be consulted wherever they are available for an indication of the types and intensity of uses which will be allowed on adjacent lands.

4. Avoid adverse impacts on adjacent lands such as increased noise levels or levels of air pollutants (including dust), unsafe traffic patterns, harrassment of wildlife by pets, pollution of downstream water supplies, and undesirable aesthetic intrusions (e.g., gawdy or obtrusive signing, tall structures which block views, and incompatible coloration or architectural style).

ADJOINING AND NEARBY LAND USES

B) ADJACENT STATE LAND

Objective: Preserve the wild and natural character of adjacent state lands designated as wilderness, primitive, canoe or wild forest by the Adirondack Park State Land Master Plan.

General Guideline: Plan development activities to avoid impairing the wilderness character of adjacent state land designated wilderness, primitive or canoe, and to avoid impairing the natural wild forest atmosphere of state land designated wild forest or intensive use, thereby insuring the continued compatibility of lands in state and private ownership.

Description:[1]

A wilderness area in contrast with those areas where man and his own works dominate the landscape, is an area where the earth and its community of life are untrammeld by man - where man himself is a visitor who does not remain. A wilderness area is futher defined to mean an area of state land or water having a primeval character, without significant improvements or permanent human habitation; which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of men's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least ten thousand acres of land and water or is of sufficient size and character as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value.

Primitive and canoe areas, while not designated as wilderness are administered to enhance their wilderness character.

A wild forest area is an area where the resources permit a somewhat higher degree of human use than in wilderness, primitive or canoe areas, while retaining an essentially wild character. A wild forest area is further defined as an area which lacks the sense of remoteness of wilderness, primitive or canoe areas and which permits a wide variety of extensive outdoor recreation.

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[1]The following definitions are taken from the Adirondack Park State Land Master Plan.

An intensive use area is an area where the state provides facilities for intensive forms of outdoor recreation by the public. An intensive use area is further defined to include campgrounds containing over 20 individual camping sites, developed beaches, launching sites for trailered boats, ski centers, visitor information centers, bobruns, parkways and memorial highways designed to accommodate significant numbers of visitors and their attendant facilities.

Further Guidelines:

1. Avoid activities that would result in the following adverse impacts on state land. Whether an impact upon adjacent state land is adverse depends largely upon the size, nature and location of proposed development and the designation of the particular state land.

   a. Noise that compromises the quality of remoteness and solitude
   b. Noise that adversely impacts wildlife
   c. The presence of pets that interfere with the natural ecosystem, e.g., dogs near deer winter concentration areas
   d. Attracting large numbers of users to state land and exceeding the carrying capacity of that land
   e. Causing users of state land to congregate in one place thereby compromising opportunities for solitude
   f. The erection of obrusive structures readily visible from adjacent state land.

2. See Topic 3A: "Adjoining and Nearby Land Uses, General".

AQUATIC COMMUNITIES

Objective: Protect generally the existing natural aquatic plant and animal communities and preserve rare and endangered aquatic plant and animal species.

General Guideline: Preserve key spawning areas, nursery grounds, food sources and food source areas; preserve habitats of rare and endangered plant and animal species; maintain adjacent vegetated areas generally as habitats and buffer zones; minimize shoreline alterations such as beach construction and emplacement of docks, rafts, boat launching facilities and breakwaters; and avoid introduction of toxic materials and nutrients to water bodies.

Description:

Aquatic communities include all those plant and animal populations which permanently or temporarily occupy surface waters. They include small attached or free-floating microscopic green plants (algae), larger aquatic plants, aquatic insects, mollusks (e.g. clams, mussels, snails), crustaceans (e.g. crayfish and small free-floating forms called zooplankton), fish, reptiles, amphibians (e.g. frogs, salamanders) birds, mammals (e.g. beaver, muskrat, otter), and many forms of fungi and bacteria.

Further Guidelines:

PROTECT KEY SPAWNING AREAS AND ADJACENT SHORELINE

1. Spawning area requirements differ among various fish species. Fisheries managers in the New York State Department of Environmental Conservation regional offices know the species present in most water bodies containing fish in their region and can often identify the key spawning areas. Development, including shoreline and bottom alterations, should be avoided in and near these areas. Activities such as motorboating and water skiing should be avoided in their vicinity. Construction work potentially affecting fish spawning areas should be avoided during spawning periods.

PRESERVE PRODUCTIVE PLANT BEDS AND STREAMS

2. Avoid disturbance to aquatic plant beds, tributary mouths, productive stream pools and riffles, and other important fish habitats.

3. Additional guidelines for the protection of aquatic communities appear in Topic 13A: "Soils, General" and C: "Surface Water", Topic 23: "Shorelines", Topic 27: "Storm Drainage", and elsewhere.

PRESERVE RARE AND ENDANGERED SPECIES

4. An inventory should be made of rare and endangered plants and animals and of their habitats on the site and measures should be taken to protect them and allow for their continuing propagation.[1] A more detailed discussion of such procedures can be found in Topic 16B: "Terrestrial Wildlife, Rare and Endangered Species", and Topic 15B: "Terrestrial Vegetation, Rare and Endangered Species".

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[1] A list of rare and endangered animals is included in Appendix D.

FRAGILE ECOSYSTEMS AT HIGHER ELEVATIONS

Objective: Minimize disturbance of fragile ecosystems at higher elevations.

General Guideline: Avoid development at elevations of 2,500 feet or more.

Description:

An ecosystem is a community of living organisms (plants, animals, bacteria, fungi) together with the physical environment in which they live (e.g. soil, water, air, heat, light). Examples of ecosystems include a pond, forest, stream, mountain top, marsh, or even an individual log or boulder.

Fragile ecosystems are easily damaged by human activities (including hiking) and are generally unable to sustain the changes which accompany most types of development without suffering a number of adverse environmental impacts.

Ecosystems above 2,500 feet in the Adirondacks can be described as three distinct life zones; the alpine, subalpine, and boreal.[1] The features which distinguish these ecosystems are related to floral, faunal, climatic, and edaphic (soil) characteristics and are technical in nature. All three ecosystems are relatively fragile, with the alpine zone being the most fragile and the boreal zone, the least.

Further Guidelines:

DEVELOPMENT ABOVE 2,500 FEET GENERALLY UNSOUND

1. Unless compelling evidence to the contrary is provided, most development above 2,500 feet will be viewed as being environmentally unsound.

2. All land use activities and development, including timber harvesting operations, conducted at higher elevations

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[1]See Appendix A for more detailed discussion of alpine, subalpine, and boreal ecosystems.

require strict adherence to special environmental protection practices, including:

a) Avoidance of slopes exceeding 25%

b) Maintenance of buffers of undisturbed vegetation, at least 35 feet[2] in width, between all land use activities and lakes, ponds, rivers, streams, and wetlands

c) Avoidance of all clearcutting

d) Seeding, fertilization (as required), and mulching of all disturbed soil surfaces. Mechanical stabilization methods may also be required

e) Avoidance of all trenching and ditching except as required to provide adequate drainage of surface and subsurface water flow from roads and trails

f) Avoidance of all areas having a shallow depth to groundwater or bedrock, or having highly erodible soils

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[2]See Topic 23: "Shoreline Development" for a discussion of buffer strips.

GROUND WATER

Objective: Preserve quality, infiltration rate, and levels of ground water.

General Guideline: Comply at a minimum with applicable governmental water pollutant discharge restrictions; particularly avoid discharges of effluent potentially degrading to ground water quality in proximity to major aquifers and aquifer recharge areas; and avoid impairment of aquifer recharge areas which could result from covering them with impervious surfaces.

Description:

Ground water is water found in a saturated geologic layer (i.e., soil, subsurface glacial deposits or bedrock). In a saturated layer, all voids (spaces between particles) are filled with water; in an unsaturated layer, or zone, the voids are filled with air or an air-water combination.

Ground water table and/or seasonal high ground water table means the highest surface of a zone of saturated soil which is at least six inches thick and which persists during the average year for more than a week when the ground is free of frost.

An aquifer is a permeable geologic formation (e.g. glacial deposit, fractured bedrock) which will yield significant quantities of water for water supply by such means as drilled or artesian wells, springs and stream recharge.

A region of the land surface which supplies water to an aquifer is an aquifer recharge area. Aquifer recharge areas are characterized by gently sloping soils[1] with a rapid permeability rate[2] or with moderate to highly fractured bedrock at or near the surface.

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[1]Slopes of less than eight (8) percent.

[2]Generally greater than 6.3 inches per hour as listed in the U.S. Soil Conservation Service soil interpretation data sheets.

Further Guidelines:

AVOID CONTAMINATION OF GROUND WATER

1. Avoid subsurface discharge of effluents potentially degrading to ground water quality. This includes toxic substances from industrial, manufacturing, commercial, and construction activities. Discharges from sewage treatment plants should not adversely affect existing or potential water supply aquifers; they should not create a situation where well water must be chlorinated when it otherwise would not be required.

2. Avoid placement of large numbers of closely-spaced individual sewage disposal systems (more than one system every one or two acres) on recharge areas of aquifers presently (or potentially) used for water supply.

3. New York State ground water quality standards must be maintained. These standards apply primarily to activities other than disposal of sewage, which could cause chemical contamination of ground water.

MINIMIZE ALTERATION OF GROUND WATER LEVELS

4. Avoid development activities which would cause significant changes in ground water levels. Limit the amount of water withdrawn from an aquifer so that overdraft (the removal of water faster than it can be resupplied) does not occur.

5. Avoid activities which would prevent runoff from reaching aquifer recharge areas. Minimize the amount of impervious surface (e.g. paved roads and parking lots, roofs, and areas where significant soils compaction occurs) over aquifer recharge areas. Generally, no more than five percent of the surface over any major recharge area should be covered by impervious or nearly impervious surfaces. Decreased aquifer recharge should not impair the aquifer's ability to provide an adequate supply of water for human use, measurably alter local hydrology by reducing the amount of water flowing into water bodies and wetlands during summer months or increasing peak runoffs in spring and after storms due to decreased underground storage.

HISTORIC SITES

Objective: Protect archeological sites, historic sites, and unique historic structures for their educational and cultural value to the area, region or state.

General Guideline: Preserve and restore archeological sites, historic sites, and unique historic structures to the extent warranted by their respective significance; avoid land uses and development on adjoining and nearby lands which would be incompatible with the significance of such sites and structures.

Description:

Historic Sites in the Adirondack Park include: a) sites of specific historic events; b) sites containing ruins of or existing historic man-made features.

The historic and cultural significance of these sites may be due to their association with specific persons or events or because they are representative of the social, political, architectural, commercial, industrial or military fabric of a by-gone era. They may be significant from a local, regional, state or even national perspective.

Such historic sites may include, for example: farmhouses, schools, town halls, mills, furnaces, cemetaries, sanitariums, forts, battlegrounds, ruins, churches, houses of famous persons, lodges, railroad stations trails and roads.

Further Guidelines:

PRESERVE HISTORIC SITES

1. If a project involves a historic site[1], the project sponsor's plans should provide for the proper survey and evaluation, excavation, stabilization, restoration, or other appropriate activity on the site by those who can properly assess its

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[1]The Adirondack Park Agency maintains an inventory, including lists and map of historic sites in the Park. Sources for this inventory include the Adirondack Museum, NY State Department of Parks and Recreation, Division of Historic Preservation, local historians, APA staff field observations, and historic references.

importance and contents (e.g., local historian, county historian, Divison for Historic Preservation in the New York State Department of Parks and Recreation and State University sources).

2. Extensive or unnecessary excavations in close proximity to existing historic buildings should be avoided.

3. Existing historic structures should not be torn down for new uses. Such structures should be utilized in a manner that is compatible with the architectural integrity of the building; e.g., using a large historic commercial building for several small shops; using an old railroad station as a restaurant.

4. Historic ruins should be stabilized or otherwise preserved. They should not be destroyed.

5. If a proposed project will involve the destruction of a historic site, the project sponsor should plan for the careful excavation of the site long enough in advance of any site preparation or construction activity to insure that the historic details of the site are recorded and any artifacts on the site can be removed and preserved.

6. Protection of historic sites can be enhanced through the establishment of an historic commission or association, a district to protect groups of buildings of significant historic architectural value, protective deed covenants, or an historic easement. In some situations tax relief may be sought for preserving historic sites.

7. Community benefits of the site can be enhanced by erecting historic markers, allowing public access to the site and encouraging use by local schools.

MAINTAIN THE HISTORIC SETTING OF A SITE

8. Development activities on or in the vicinity of property containing a historic site should not detract from the historic setting.

9. Disruption to the visual quality both <u>from</u> the site and into the site should be minimized through use of screening by vegetation and existing topographical features, appropriate architecture or modest signage.

MINERAL RESOURCES

Objective: Maintain access to, allow for use of, and conserve existing known mineral resources.

General Guideline: Avoid activities which would preclude present or future use of important mineral resources that may be of economic significance to the region.

Description:

Significant known deposits of various mineral resources are located in several areas within the Adirondack Park.[1] Metallic and non-metallic mineral extractions in the Adirondacks currently include the mining of iron, titanium, talc, lead, zinc, wollastonite, garnet, and silver; and quarrying of crushed stone and dimension stone (e.g. red sandstone and light grey anorthosite blocks of stone cut to specified sizes). Sand and gravel deposits are considered mineral resources.

Further Guidelines:

LOCATE DEVELOPMENT AWAY FROM POTENTIAL MINERAL EXTRACTION SITES

1. New residential, commercial, or industrial development or other structural development (e.g., roads, utility lines, public buildings) not related to mineral extraction activities should not be located in places where it would prevent, or significantly hinder, the effective and safe extraction of important mineral resources, either at the present or in the future.

For example, such development should not be located within or in close proximity to:

a) The edges of existing open pit mines, the areas where open pit mining is likely to occur or at the entrances of existing below-ground mines

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[1] Technical Report 3, Forests, Minerals, Water and Air, by the Temporary Study Commission on the Future of the Adirondacks contains detailed descriptions of those mining operations active in 1970 including site descriptions, industrial or commercial markets and the number of workers employed.

b) Areas where properly managed mineral extraction activities are likely to cause ground subsidence

c) Areas where properly managed mineral extraction activities are likely to require the depositing of tailing or other waste products

d) Areas through which waste water is likely to run from tailing or other disposal piles associated with properly managed mineral extraction activities

e) Areas which serve or could serve as road or rail access to important mineral resource deposits

f) Areas likely to be adversely affected by noise from properly managed extraction activities such as blasting, stone crushing or truck traffic

g) Areas likely to be affected by windblown dust from open pits or tailing pipes

2. Most mining activities will require a permit from the Department of Environmental Conservation.

OPEN SPACE

A) GENERAL

Objective: Maintain the open space character of the project site, adjacent land and surrounding areas.

General Guideline: Preserve vegetative screening and existing topography and employ clustering and careful siting methods where appropriate to minimize the impact of development activities and land use alterations on open space; and preserve undeveloped areas as large as possible in view of project objectives.

Description:

Open Space includes several kinds of areas: 1) areas of any size that exist or appear to exist in a virtually natural and undeveloped state, including wooded and forested areas, natural fields, stream and river corridors, wetlands, lake shores, mountainous areas, plains, and all other types of natural terrain; 2) areas that have been developed for recreational uses on cleared land (e.g., beach, golf course, public park, playground); and 3) cleared agricultural lands, both active and inactive. Open space can be owned either in common by the community or be a part of lots owned by individuals.

Further Guidelines:

SELECTION OF OPEN SPACE

1. The appropriate overall intensity guideline(s) of the Adirondack Park Land Use and Development Plan (Section 805(3) of the Adirondack Park Agency Act) for the land use category(ies) in which the project site is located (moderate intensity, low intensity, rural use or resource management) must be applied. There are no intensity guidelines for Hamlet and industrial use areas. Rural use and resource management areas are the two categories in which maintenance and preservation of open space character, both from the standpoint of visual quality and intensity of use, are most important.

2. The area on a project site available for open space will be the land remaining after space is allocated for houses, roads, driveways, accessory uses and other structures.

3. The following areas should be included in those portions of a project site that are left in a natural and undeveloped state:

   a. areas containing serious physical limitations to development; e.g., slopes greater than 25%, excessively permeable soils, shallow soils, poorly drained soils, extensive bedrock outcroppings, high ground water
   b. buffer zones around lakes, ponds, rivers, streams and drainage courses
   c. wetlands and buffer zones around wetlands
   d. elevations above 2500 feet
   e. buffer zones along public and private roads
   f. areas containing key or critical wildlife habitats; e.g., wetlands, deer wintering yards, beaver ponds, fish spawning areas, waterfowl production areas
   g. areas containing key or critical vegetative communities; e.g., a virgin stand of trees, bogs, alpine meadows
   h. sites of scenic and/or geologic interest; e.g., gorges, waterfalls, geologic formations
   i. floodplains of all lakes, ponds, rivers and streams
   j. landscapes having special scenic qualities, including scenic vistas as delineated on the Adirondack Park State Land Master Plan map
   k. Viable agricultural soils
   l. aquifer recharge areas

4. Any cleared areas that have been previously developed as recreational areas such as a golf course, public park or playground should continue to be so used. The open quality of cleared agricultural lands should be maintained.

5. In some situations it may be desirable to create open filled areas where none exist. These should contain as few man-made structures and facilities as possible.

EMPLOY SCREENING TO MAINTAIN OPEN SPACE CHARACTER

6. Existing topographic features (e.g., ridges, depressions, hills) and existing vegetation (e.g., stands of trees, clumps of bushes) should be retained and utilized to the greatest degree possible to screen (conceal, camoflauge or otherwise lessen the visibility of) any developed areas on the project site (e.g., buildings, roads, utility corridors, parking lots) from:

   a. undeveloped areas on the project sites
   b. other developed areas on the project site (e.g., other residential structures)
   c. roads and trails
   d. adjoining properties
   e. water bodies on or adjacent to the project site
   f. scenic vistas

7. Buildings, roads, utility facilities, parking lots and other development should be of a scale that will allow them to be screened by existing topography and/or vegetation. Where existing vegetation is not present on certain portions of the project site, native plant species should be planted (e.g., staggered rows of trees, clumps of bushes) to conceal, camouflage, or otherwise lessen the visibility of any developed area on the project site from the six areas listed above.

8. Buildings and other structures (e.g., fences, utility poles) should be constructed of natural materials (e.g., stone and wood) and/or should be of a color or texture that blends into the surrounding area and helps make such structures less visible from points on and off the project site.

9. Proposed roads and utility corridors should follow existing topographic contours and avoid perpendicular crossings of contour lines.

10. Buildings should be located below the crest of hills or ridge lines.

CLUSTERING AND COMMON FACILITIES TO MAINTAIN OPEN SPACE

11. Cluster buildings and other non-recreational use structures to leave as much open space as possible.

12. Common facilities (e.g., beach and boating facilities, tennis courts, picnic areas, and others) should be provided where feasible.

LEGAL TECHNIQUES TO MAINTAIN OPEN SPACE

13. The project sponsor should provide deed restrictions, restrictive covenants, a homeowner's association,[1] easements or other similar appropriate means to insure that:

    a. open space areas remain as open space areas
    b. open space areas are maintained (e.g., cleanup, trail maintenance, playground maintenance) in a manner that will protect their open space qualities
    c. existing and planted vegetation is preserved and maintained in order to enhance the open space character of the project site, including access roads
    d. some person(s) (e.g., sponsor, property owner, homeowners' association) is responsible for the payment of taxes on open space areas.

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[1]For further information, consult "Homeowners Associations: the Offering of Cooperative Interests in Realty in New York State. Preliminary Working Draft." Adirondack Park Agency,

Deed restrictions are more appropriate where a small to moderate number of lots are proposed, whereas all three techniques may be desirable for larger subdivisions.

14. The shoreline clustering provisions of Section 806 of the Adirondack Park Agency Act should be utilized wherever possible.

OPEN SPACE

B) OUTDOOR RECREATION

Objective: Maintain the quality and availability of land for outdoor and open space recreational purposes.

General Guideline: Provide on the project site sufficient open space areas for outdoor recreational use by those persons who will use the proposed project, taking into account the existing recreational resources available in the area; and locate buildings and other development so as not to interfere with those areas to be used as hiking, bicycling, and cross-country skiing trails as well as trailbike, jeep, all-terraine-vehicle and horse trails, playgrounds, picnic areas, campgrounds, parks, beaches and similar uses.

Description:

Outdoor recreational activities can be classified as either facility dependent or independent. Facility independent recreational activities require little or no alteration to vegetation or topography, and may include hiking, hunting, fishing, canoeing, and bird watching. Facility dependent recreational activities usually require special site preparation and structural development and involve construction of such facilities as tennis courts, swimming pools, docks, boathouses, marinas, golf courses and ski trails and lifts.

Further Guidelines:

1. Facility dependent recreational activities should be carefully planned and sited, taking into account such factors as soils, slope, depth to groundwater and bedrock, visual character of the area, and general drainage patterns.

2. The type and size of proposed facilities and their design and construction should be a function of site suitability and projected demands.

3. A homeowners' association (or similar mechanism) may be the best way to maintain and manage recreational facilities to ensure their continued efficient operation.

4. Public access should be provided for open space use, primarily facility independent, where such access existed prior to development and where it would not unduly interfer with the use and enjoyment of the open space by

SHORE LINES

Objective: Maintain or enhance the existing physical, biological and aesthetic characteristics of the shoreline of all lakes, ponds, rivers and streams.

General Guideline: Comply at a minimum with applicable governmental shoreline restrictions, minimize construction or development of any kind near or on shorelines; avoid physical modifications of shorelines themselves; minimize the removal of vegetation along shorelines; locate buildings so as to be partially or completely screened from shorelines by natural topography or vegetation; maximize the preservation of stretches of shoreline in a natural, unchanged and undeveloped state.

Description and Further Guidelines:

See Topic 23: "Shoreline Development".

SPECIAL INTEREST AREAS

Objective: Preserve special interest areas such as unique natural features and their surrounding environs.

General Guideline: Avoid physical and aesthetic alteration and impairment of the natural condition of unique physical features such as gorges, waterfalls and interesting geological formations; provide for their continuing protection; utilize these special areas as assets to development.

Description:

Special interest areas are sites of important scenic natural, geologic or historic value in the Adirondack Park.

1. Scenic: Natural objects or subjects having attractive visual or aesthetic qualities such as gorges, rapids, waterfalls, visually interesting rock formations and mountain summits, and scenic views from trails, rivers and roads.[1]

2. Natural: Sites characterized by the presence of distinctive plant or animal communities or the habitats of rare or endangered species,[2] stands of virgin or old growth timber, large specimen trees, established nature trails or preserves and certain wetlands.

3. Geologic: Rock or landscape forms of particular educational or research interest and of only limited scenic importance, including slopes, morraines, kettle ponds, fossil beds, fault lines, caves and prime mineral collecting sites.

4. Historic: Examples of historic sites and guidelines for their consideration can be found in Topic 8: "Historic Sites".

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[1] See Topic 2B: "Aesthetics, Scenic Vistas" for a discussion of considerations applicable to areas of exceptional visual quality.

[2] See Topic 5-2: "Aquatic Communities"; 15B-1: "Terrestrial Vegetation, Rare and Endangered Species", and 16B-1: "Terrestrial Wildlife, Rare and Endangered Species".

Many special interest areas have values in more than one of the above categories.

Further Guidelines:

METHODS TO MAINTAIN THE CHARACTER OF SPECIAL INTEREST AREAS

1. A project should maintain or enhance the existing character of a special interest area on or off the project site. The destruction of a special interest area in the course of project implementation is unacceptable and is to be avoided.

2. A buffer strip of undisturbed vegetation and topography should be maintained around a special interest area. Development activities should not occur in close proximity to such areas.

3. Vegetational clearing around a special interest area that would destroy a sense of remoteness at the site should be avoided.

4. Sediment, sewage effluent or other waste materials from a development should be kept from drainageways that would carry these pollutants to waters associated with a special interest area.

5. Air pollutants such as auto emissions, construction dust and incinerator smoke should be controlled so as to prevent any harm to vegetation, decrease in visibility or introduction of foreign odors at a special interest area.

6. Facilities such as utility lines and transportation arteries should not be constructed across scenic special interest areas.

7. Neither commercial, industrial, construction or extraction activity nor increased traffic volumes associated with a project should raise the background noise level at a special interest area to a point potentially disturbing to wildlife or users.

8. Protection of many special interest areas can be insured through deed restrictions, scenic easements, creation of special preservation districts or land trusts (a non-profit, tax exempt service organization with the purpose of raising funds to acquire, maintain and manage natural areas), or donation of larger land areas to the Adirondack Nature Conservancy or similar organization. In some situations it may be desirable for a sponsor to seek a tax relief incentive for maintaining natural areas and/or providing limited

access. Benefits to the community can be enhanced by providing, where appropriate, for public access or allowing use of an area by local schools.

METHODS TO CONTROL INCREASED USER IMPACT

9. While a project should not preclude reasonable access to a special interest area, neither should it facilitate untrolled use which could result in adverse impacts such as erosion of existing trails, a proliferation of short cuts, creation of muddy areas, elimination of ground cover surrounding an attraction, noise disturbance to other users and wildlife, acts of vandalism, and an increase in graffitti, litter, or personal accidents to users.

10. Use of, and access to, special interest areas on or off the sponsor's land should be controlled by such means as limiting the number of access points to the attraction, and keeping roads, through-trails and development centers away from the attraction.

MEASURES TO PROTECT COMMERCIALIZED SPECIAL INTEREST AREAS

11. Commercial development of a special interest area in private ownership as a tourist attraction should be done in a manner that will protect the site from deterioration and allow public enjoyment of the feature in its natural condition. Plans for a commercial development should include the following measures, as needed and appropriate, to protect the natural features:

    a) control of the number and movement of visitors through fragile areas
    b) closing of certain trails or sites to visitation during wet times of the year when undue erosion or destruction of vegetation could result
    c) surfacing of footpaths to control erosion
    d) construction of diversion ditches to control runoff;
    e) provision of footbridges over wet areas
    f) protective fencing for visitors and resources
    g) provision for public transportation within the area.

12. Interpretive signs, tour guides, tapes or other such devices should be designed on a scale and in a manner compatible with the natural character of the special interest area.

See also Appendix G:
APA Soils Handbook (August 1990)

SOILS

A) SOILS, GENERAL

Objective: Prevent accelerated soil erosion and the potential for earth slippage.

General Guidelines: Respect existing natural features such as slope, soil texture and structure; minimize removal of vegetative cover; rapidly revegetate cleared areas; limit cuts and fills; and employ such erosion control devices and measures and to control runoff.

Description:

Soil is the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.[1] Soils can be differentiated by the character, size and shape of soil particles; percentage of gravel, sand, silt, and clay; the arrangement of soil particles into groups or aggregates; relative permeability; density; plasticity; slope; depth to bedrock; depth of water table; and by the presence or absence of a dense soil layer such as a fragipan.

Soil erosion refers to the detachment and movement of soil by wind, water, ice or gravity. Accelerated soil erosion is any rapid increase in the amount or rate of such soil movement usually due to man's activities. Accelerated erosion is often described in terms of its visual effect on the landscape: sheet erosion (uniform removal of soil from a slope), rill erosion (formation of tiny channels by uneven removal of soil) and gully erosion (severe localized removal of soil by water runoff which forms and deepens small or large narrow channels).

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[1] "Resource Conservation Glossary". 1970. U.S. Soil Conservation Service. Ankeny, Iowa. 52 pp.

Earth slippage refers to soil movement which occurs when the bottom surface of a soil mass becomes slippery and fluid enough to slide down slope. If the sliding material is sufficiently fluid, it can also be called an earth or mud flow.

Further Guidelines:

SLOPE LIMITATIONS

1. Development should not occur on steep slopes. Slopes over 25% are considered excessively steep and construction on such slopes should be avoided. If the soil is fine (e.g., composed largely of lacustrine silts and clays), construction should be avoided on slopes over 10%.

SOIL LIMITATIONS

2. Avoid construction activities which disturb the soil during wet seasons of the year.

3. Development should be avoided on soils with shallow depth to bedrock or groundwater.

4. Soils with a fragipan or other dense layer (which may or may not support a perched water table) are severely limiting to many types of development.

5. Avoid development on soils having excessive amounts of stones and boulders.

MINIMIZE EXPOSED SOIL

6. Minimize the amount of soil exposed during and after construction.

7. During construction, protect all vegetation that it is not essential to remove by such means as flagging, staking, and by wrapping trees with snow fencing.

8. Phase development of large tracts of land so that construction is limited to small workable units and is of the shortest possible duration on any single site. No area should be stripped of vegetation and left exposed for long periods.

9. Slopes and surfaces disturbed by development activities should be stabilized as soon as possible. Use riprap, terracing, stone blanketing or other mechanical means where necessary to protect road cuts or other exposed soil.

10. Revegetate soil stripped of vegetation as soon as possible following its disturbance. Plan construction to allow revegetation before winter and follow the guidelines on revegetation in Appendix B "Conservation Plantings on Critical Erosion Areas", where applicable.

METHODS TO CONTROL RUNOFF

11. Minimize the percentage of the site covered by impermeable surfaces such as buildings and pavement. Consider the use of pervious road surfacing (particularly crushed stone) when new roads and pavement would cover highly pervious and/or erodible soils. Maintain infiltrative capacity of existing soil by avoiding unnecessary compaction by heavy machinery.

12. Where necessary, use properly designed control devices such as lined channels, outlets, sediment traps and sediment basins to direct runoff flow, decrease its velocity, trap its sediment and release it safely to a downstream area or to soil substrata. The number of new channels created, however, should be minimized.

13. On sites where soil conditions present serious limitations to development (or to determine if they do), the local Soil and Water Conservation District Office should be consulted. The U.S. Soil Conservation Service can perform soil surveys[2] and provide professional guidance on how to make use of soils data when planning, thus minimizing soil-related environmental impacts.

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[2]District offices normally establish priorities for providing soil surveys, which may include individually owned parcels. This does not automatically mean they will provide soil surveys for any and all pieces of land.

SOILS

B) AGRICULTURAL SOILS

Objective: Conserve viable agricultural soils.

General Guideline: Avoid activities on viable agricultural soils which would diminish or preclude their use for agricultural purposes.

Description:

Viable agricultural soils are those suited for commercial agricultural production, whether or not they are currently under agricultural management.

A report on soils in the Park suitable for agricultural use has been prepared cooperatively by the SUNY College of Agriculture and Life Sciences at Cornell University and the U.S. Soil Conservation Service.[1] It ranks soil suitabilities and contains conty-wide inventories.

Depending on the nature, location, and past and present use of these soils, all of them, in one situation or another, may be considered viable agricultural soils.

The SCS has recently prepared a classification system for prime and unique farmlands, which is based on specific characteristics.[2] They will assist in making an elevation of the viability of particular soil areas.

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[1]R. Feuer and C.H. Maine. 1972. "Soil Groups for Agriculture: a report of soils occuring primarily on private land within the 'Blue Line' of the Adirondack Park." N.Y. State College of Agriculture and Life Sciences at Cornell University. Cornell Regional Office. Voorheesville, NY 22 pp.

[2]R.M. Davis. 1975. "Land inventory and monitoring memorandum No. 3: Prime and Unique Farmlands." U.S. Soil Conservation Service, Washington D.C., 5 pp.

Further Guidelines:

1. Development should allow for future agricultural use on as large a portion of the land as possible. Areas with viable agricultural soils should be left as open space.

2. Buildings or other permanent land alterations should be clustered to leave viable agricultural land in large, manageable tracts. Development should not divide viable agricultural land into small, unmanageable, or inaccessible units.

3. Avoid activities that would require the removal of top soil or the placement of impervious surfaces on viable agricultural soils.

4. Development should not preclude the possible future inclusion of Agricultural lands in an approved Agricultural District.[3]

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[3]Contact the Department of Environmental Conservation or County Cooperative Extension Agency for information on creating an agricultural district.

SURFACE WATERS

A) WATER QUALITY AND EUTROPHICATION

Objective: Maintain or enhance existing physical, chemical and biological water quality characteristics and prevent any undue acceleration of existing rates of eutrophication of water bodies.

General Guideline: Maintain wide buffer strips of natural vegetation bordering water bodies; minimize channel disturbance and alterations; preserve shoreline vegetation; minimize hydrologic changes which would result from damming or impounding; avoid introduction of nutrients from the use of fertilizers and from sewage effluent; and avoid introduction of toxic materials to water bodies.

Description:

Surface waters are bodies of water which exist above ground level during all or part of each year. As generally used, this term refers to ponds, lakes and reservoirs; permanent, intermittent and ephermeral streams and rivers; and open water portions of marshes and bogs. Note that the term streams includes permanent, intermittent and ephemeral streams. Permanent streams carry water all year during the average year, and are fed by a relatively stable ground water flow. Intermittent streams carry water part of the year, and are normally dry at other times. Both types of streams have a defined bed and banks. Ephemeral streams do not have a defined bed or banks and are analogous to "runoff" or "drainage" channels in which water normally flows only during or shortly after the fall of precipitation.

Water quality refers to the chemical, physical, biological, and aesthetic characteristics of water. It is measured and expressed using such parameters as bacteria count, transparency, color, dissolved oxygen concentration and amount of suspended solids.

Eutrophication is a natural process by which plant nutrient concentrations in water increase gradually over time. (The two nutrients of primary importance are phosphorus and nitrogen.) This results in the increasing capacity of a body of water to support the growth of plants and other aquatic organisms. Numerous effects are associated with increased aquatic organism growth, two examples of which include decreased water transparency and decreased dissolved oxygen concentration in the

bottom waters of lakes. Eutrophication accelerated by nutrient enrichment due to man's activities is termed "cultural eutrophication". The greatly increased rate at which cultural eutrophication occurs is usually accompanied by a deterioration in water quality.

Further Guidelines:

CONTROL EROSION AND SEDIMENTATION

1. Avoid any increase in turbidity, sedimentation, or the concentration of suspended solids, during construction or on a long term basis.

2. In addition to following the guidelines relating to the control of erosion and sedimentation under Topic 13A: "Soils, General", buffer strips of at least 35 feet of substantially undisturbed vegetation should be left between construction areas and surface waters. This distance should be increased if the effect of such factors as soil type, slope, and type and density of vegetation would cause a greater potential for increased soil erosion.[1] The use of buffer strips is not meant to preclude clearing of vegetation for the necessary crossing of a stream, selective thinning and pruning for a shoreline view, or such activities as might be reasonably undertaken to protect public health, safety or welfare.

3. New agricultural activities should maintain or enhance existing water quality. Where a clearcut of over 25 acres is undertaken to create agricultural cropland, cutting should be carried out in conformance with the provisions of a Conservation Plan meeting the requirements of the U.S. Soil Conservation Service.

MAINTAIN NATURAL WATER TEMPERATURES

4. Development should not adversely alter existing stream or lake water temperatures or patterns of temperature fluctuation.

5. Sufficient shoreline vegetation should be preserved along stream and lake shorelines to maintain shade and avoid increases in stream temperatures.

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[1] See Topic 23: "Shoreline Development," for a more detailed discussion of buffer strips.

AVOID NUTRIENT ENRICHMENT OF WATERS

6. Nutrient enrichment that might cause an increase in the natural rate of eutrophication should be avoided.[2] Such enrichment might be caused by effluent from septic tank subsurface disposal systems, municipal sewage treatment plants, stormwater runoff, lawn fertilizer, soil disturbance or sanitary landfill leachate. In addition to the guidelines in Section II under Storm Drainage, Sewage Disposal and Solid Waste Disposal, the use of lawn fertilizers should be carefully controlled. They should be used only where necessary and never in quantities greater than recommended by the manufacturer. Inorganic or organic fertilizers should not be used except in small amounts within 100 feet of any lake, pond, river or stream.

AVOID INTRODUCTION OF TOXIC MATERIALS

7. The direct or indirect addition of toxic materials (pesticides, herbicides, gas, oil, de-icing compounds, etc.) to surface waters should be prevented. Intentional introduction of toxins, such as the spraying of waters for control of black fly larvae, should be minimized and carefully controlled to protect non-target organisms. See Topic 21-1: "Pesticides and Herbicides".

MAINTAIN DISSOLVED OXYGEN CONCENTRATIONS

8. Existing dissolved oxygen concentrations should be maintained or enhanced by minimizing or reducing input of oxygen demanding materials (e.g., organic matter in sewage wastes and storm water runoff).

PATHOGENIC BACTERIA AND VIRUSES

9. Avoid the addition of pathogenic bacteria and viruses to surface waters. These may be present in effluent from such sources as sewage disposal systems and solid waste disposal sites.

WATER QUALITY STANDARDS

10. At a minimum, all New York State water quality standards should be met.

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[2]Where potentially significant increases in the addition of nutrients to a water body may result from a project, the expected change should be calculated using the following or similar methods: "A simple method for Predicting the Capacity of a Lake for Development based on Lake Trophic Status" (Dillon and Rigler, 1975) and "A Manual for Calculating the Capacity of a Lake for Development" (Dillon, 1974).

SURFACE WATERS

B) SURFACE DRAINAGE

Objective: Retain existing surface water drainage and runoff patterns and existing flow characteristics.

General Guideline: Minimize alterations to existing drainage patterns and drainage courses; preserve drainageways in their natural state; and provide; where necessary, natural ponding areas and other measures designed to provide natural retention of storm water runoff if development includes a significant area of impervious surface.

Description:

Surface drainage, or runoff, is precipitation that finds its way into streams, ditches, depressions, swales or other natural or manmade channels without infiltrating into the soil.

The combination of these drainage courses, or channels, including their location and relation to each other as they affect water flow, constitutes a site drainage pattern.

Further Guidelines:

MAINTAIN EXISTING RUNOFF RATES

1. Post-development runoff rates and quantities on undeveloped portions of the project site and on all areas off the site should be substantially the same as those associated with pre-development conditions.

2. Activities which would contribute to increased runoff should be minimized, including the following:

   a) Creation of impervious surfaces, such as cement, blacktop, building roofs and compacted surfaces such as dirt roads
   b) Removal of vegetation
   c) Diversion of surface drainage or other topographic alteration which would increase the contributory drainage area of a stream.

MAINTAIN EXISTING DRAINAGE PATTERNS

3. Alterations to existing surface drainage patterns should

be avoided. Activities that would re-direct or impede existing surface water flow, or which would intercept subsurface flow, should be avoided, including:

a) Filling in wetlands and other natural water retention areas;
b) Trenching and roadcuts in bedrock;
c) Ditching or other excavation in areas of high ground water;
d) Major topographic alterations;
e) Placement of extensive tile underdrain systems;
f) Construction of artificial berms and trenches.

Where alterations such as culverts, storm sewers and bridges are necessary, they should incorporate methods that will minimize bank erosion, bottom scouring, and sedimentation.

In addition, such alterations should allow for or provide water courses able to convey a rate of flow equal to the capacity of the original stream plus any additional flow that would result from development or changes in land use. (For more specific guidelines on capacity of culverts and storm drainage systems, see Topic 27: "Storm Drainage".)

SURFACE WATERS

C) FLOOD PLAINS

Objective: Maintain the storage capacity of flood plains and their existing ability to convey water downstream; and avoid activities in flood plains which will result in dangers to life, safety and property if subjected to flooding.

General Guideline: Avoid the placement of buildings intended for human habitation, commercial use and industrial use within flood plains; avoid the use of fill to create elevated sites and conform all development plans to any applicable local flood plain regulations.

Description:

Flood plains are land areas that adjoin a river, stream, pond, lake or wetland which are likely to be occasionally flooded due to spring snowmelt, severe rainfall, and/or oversaturation of the soil. In most cases, flood plain management is limited to the boundary of the 100-year flood, the highest level of flood that, on the average, is likely to be equalled or exceeded once every 100 years (i.e., that has a one percent chance of occurring in any given year).

Flood plains are usually separated into relatively distinct areas, one being the floodway and the other the floodway fringe. The floodway is comprised of the stream channel and immediately adjacent lands which are frequently flooded and which, during extreme floods, help carry the major portion of flood waters. During major floods, waters in this area are deep and fast moving. Floodway can be more technically defined to mean that portion of the flood plain area that must remain unrestricted in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than one foot at any point.

The floodway fringe is that portion of the flood plain extending from the outer edge of the floodway to the outer limit of the 100-year flood plain. During a major flood, water in this area is often shallow and slow moving.

Floodproofing means any combination of structural and non-structural additions, changes or adjustments to properties and structures which reduce or eliminate flood damage to lands, water and sanitary facilities, buildings or other structures, and their contents.

Further Guidelines:

DEVELOPMENT IN THE FLOODWAY

1. Development or other alterations in the floodway should be limited to open space uses having low flood damage potential and offering minimum obstruction to the flow of floodwaters. Examples of these uses include agriculture, parks, golf courses, and seasonal campgrounds.

   Certain uses, such as agricultural and forestry uses and structures, and mineral extraction, including extraction of sand and gravel, may properly take place provided that:

   a) No structure, (temporary or permanent), fill, deposit, obstruction, storage of materials or equipment or other uses, acting along or in combination with existing or future uses, will unduly affect the efficiency or the capacity of the floodway. Such uses should not unduly increase flood heights, cause increased velocities or obstruct or otherwise catch or collect debris which will obstruct flow under flood conditions.

   b) No buildings or structures to be used for human habitation are to be constructed in the floodway.

DEVELOPMENT IN THE FLOODWAY FRINGE

2. Intensive development should not occur in the floodway fringe unless there are no other reasonable alternatives to developing the project site. If it is to occur, development should meet the following criteria:

   a) Residential structures should have the lowest habitable floor, including basement, elevated to at least one foot above the 100-year flood level. Avoid the use of filling to create elevated construction sites.

   b) Buildings and structures should be constructed and placed so as to offer the minimum obstruction to the flow of flood waters (i.e., longitudinal axis parallel to the direction of flood flow, and placement approximately on the same flood flow lines as those of adjoining structures). They should be firmly anchored to prevent flotation which may result in damage to other structures and restrictions of bridge openings or other narrow portions of the stream or river.

   c) Buildings and structures should include flood-proofing measures consistent with the flood protection elevation

and associated flood factors for the particular area in which construction is to take place. Such measures may include:

i) Anchorage to resist flotation and lateral movement.
ii) Reinforcement of walls to resist water pressure.
iii) Installation of watertight doors, bulkheads and shutters.
iv) Use of paints, membranes or mortars to reduce seepage of water through walls.
v) Addition of mass or weight to resist flotation.
vi) Installation of pumps to lower water levels in structures.
vii) Construction of water supply and waste treatment systems so as to prevent the entrance of flood waters and the discharge from such systems into flood waters.
viii) Pumping facilities to relieve hydrostatic water pressure on external walls and basement floors.
ix) Elimination or supplementation of gravity flow drains.
x) Construction to resist rupture or collapse caused by pressure of floating debris.

OTHER GENERAL DESIGN CRITERIA

3. On-site waste disposal systems should be located so as to avoid impairment of or contamination from the systems during flooding. The bottom of tile fields or seepage pits should be at least two feet above the 100-year flood elevation. Septic and holding tanks should be installed so they will not become bouyant and "float" to the surface during floods.

4. New or replacement water supply systems should be so designed as to minimize or eliminate infiltration of flood waters into the systems and discharges from the systems into flood waters.

5. Minimize cutting of vegetation and otherwise protect highly erodible stream banks and flood plain soils.

6. Road fills and other fill areas should be constructed of soil which does not tend to "liquify" when saturated and slump, and/or wash away. All new exposed cut and fill surfaces should be stabilized to protect against erosion by flood waters. This should be done carefully, especially in flood fringe areas where the direction of flow is often unknown or difficult to predict and erosion control structures placed to minimize sediment movement and/or encourage sediment deposition may do more damage than they prevent if they are improperly located.

7. In many towns, flood insurance is available under the U.S. Housing and Urban Development Flood Insurance Program for existing structures located in flood hazard areas, and in some cases for proposed structures to be located in the floodway fringe. In the latter case, structures must be floodproofed.

8. Construction in floodplain areas having special flood hazards may require a permit from the Department of Environmental Conservation if the town in which the project will be located does not have Federal Flood Insurance. Maps delineating flood hazard areas are available at town clerk's offices.

TERRESTRIAL VEGETATION

A) VEGETATION, GENERAL

Objective: Preserve or quickly restore terrestrial vegetation.

General Guideline: Minimize clearing of vegetation; avoid clearing vegetation where damage will result to remaining vegetation from such factors as wind, erosion and frost; and protect remaining vegetation during the construction period.

Description:

Terrestrial vegetation includes all the vegetation occupying the land surface of an area, including trees, shrubs, vines, herbs, grasses and other green and non-green plants which grow, at least in part, at or above the soil surface. Certain terrestrial plants may persist in areas where they are periodically inundated (flooded) or immersed.

Further Guidelines:

MINIMIZE CLEARING OF VEGETATION

1. Development activities should occur with minimal disruption of existing vegetation.

2. When possible, selective clearing of mature trees should be done over a period of several years, rather than large-scale cleaning during a single season. This allows the various grond-cover plants to adjust to the changing forest conditions and helps to prevent soil erosion.

3. Avoid clearing of vegetation in areas having a high water table, as this may cause a rise in the water level leading to localized flooding of the ground surface.

4. Avoid clearing of vegetation in runoff channels and drainage ways to help prevent erosion and scouring by water.

5. When removal of vegetation is necessary, adhere to sound forestry practices pertaining to the cutting, clearing, and removal of timber and to the maintenance of an aesthetically pleasing forest environment.[1]

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[1]See Appendix C, "Timber Harvesting Guidelines for New York".

6. Adequate precautions should be taken to protect healthy trees and other vegetation left on the site from damage due to construction activities. This may include using physical barriers around trees, minimizing the movement of heavy equipment over roots, and avoiding the placement of fill around tree trunks.

PREVENT SAFETY HAZARDS

7. Minimize removal of trees in areas having a shallow depth to bedrock, the water table, or hardpan and in areas having a large proportion of large, even-aged, mature trees to prevent the likelihood of timber and property damage due to windthrow (the uprootal and blowing-over of trees by wind). Trees having shallow root systems are easily toppled by increased exposure to winds, as are tall trees which matured within the protection of dense forest.

STABILIZE AND REVEGETATE EXPOSED SOIL

8. To prevent accelerated erosion, revegetation of exposed soil surfaces should be done as soon as possible, and in any event not later than one full growing season after initial exposure.

9. Mechanical soil stabilization measures may be required to prevent erosion prior to the establishment of vegetative cover.[2]

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[2]For a detailed discussion of revegetation and mechanical soil

TERRESTRIAL VEGETATION

B) RARE AND ENDANGERED SPECIES

Objective: Preserve rare and endangered terrestrial plant species.

General Guideline: Locate development and other intensive human activities so as to protect the location and habitats of rare and endangered plant species and allow for the continuing propagation of these species.

Description:

Endangered plants are those native species that occur at less than 10 recorded locations in New York State, while rare plants occur at 10 or more, but less than 30 recorded locations.[1]

Further Guidelines:

PRESERVE HABITATS OF RARE AND ENDANGERED SPECIES

1. Development plans should include an inventory of any rare or endangered species found on the site and should propose measures to be taken to protect them and allow for their propagation.

2. The most practical means of affording protection to rare and endangered plants is to design development to avoid or minimize disturbances to their habitats.[2] Development

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[1]A listing of rare and endangered plants (Adirondack Park Agency, 1971) has been prepared from records of the N.Y.S. Museum based on the occurrence of these plants in New York State. The locations of many rare and endangered species habitats within the Park have been mapped as part of the Unique Natural and Cultural Features maps available at Agency headquarters in Ray Brook, NY.

[2]The technical listing of New York's rare and endangered species is prefaced by a brief description of those habitats which may be inventoried as an initial step in determining the presence of particular species.

activities should be avoided or severly restricted in habitats that typically include rare or endangered plant species such as alpine areas, bogs, ravines, and wetlands.

3. Development should be avoided in areas which were once the site of rare or endangered species and which are now suitable for the establishment of species that may have been lost as a result of actions or events which occurred in the past, such as fires, landslides, flooding, use of herbicides, or excessive harvesting.

4. Activities proposed outside rare or endangered species habitats may indirectly cause adverse impacts upon habitats and should be avoided. Examples include disruption of natural drainage to and from wetlands or placement of high density housing or an air pollutant source in close proximity to sensitive vegetation.

TERRESTRIAL VEGETATION

C) PRODUCTIVE COMMERCIAL FOREST LAND

Objective: Conserve productive forest lands.

General Guideline: Avoid impairment of productive forest lands for commercial forest production by employing sound forestry practices and by employing such planning techniques as clustering of development.

Description:

Productive commercial forest land is land carrying forest growth or, if cleared, bearing evidence of former forests; and which is capable of bearing merchantable timber, is currently or prospectively accessible, and is not withdrawn from forestry use.

Further Guidelines:

CONSERVE PRODUCTIVE COMMERCIAL FOREST LAND

1. Development should be avoided which would (a) remove productive commercial forest land from forestry use, or (b) divide large blocks of productive commercial forest land into small, segregated, unmanageable units.

USE SOUND TIMBER MANAGEMENT AND HARVESTING TECHNIQUES

2. Any cutting should encourage healthy forest stand reproduction and minimize environmental degradation by incorporating sound timber harvesting practices, including cleanup operations.[1]

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[1]See Appendix C for a more complete discussion of timber harvesting guidelines.

TERRESTRIAL WILDLIFE

A) TERESTRIAL WILDLIFE, GENERAL

Objective: Maximize the preservation of terrestrial wildlife species.

General Guidelines: Preserve key wildlife habitats, such as deer wintering yards, waterfowl nesting areas, productive feeding areas, and important vegetation transition areas; and maintain wildlife diversity to the extent possible in view of project objectives by maintaining a diversity of habitat.

Description:

The term terrestrial wildlife, as used in this section, refers to all forms of animal life which spend a significant portion of their lives upon the land. Included within this category are all mammals, birds, and reptiles as well as the land dwelling forms of various insects, worms, and amphibians.

Further Guidelines:

MAINTAIN A STABLE, NATURAL COMMUNITY

1. Preserve a well-balanced, diverse community of animals, characterized by a number of different species. Providing for a naturally stable and diverse community is more important than attempting to maintain artificially high population levels of any one animal or group of animals to the detriment of other species.

PROTECT CHARACTERISTIC, RARE, AND ENDANGERED SPECIES

2. Special emphasis should be given to the protection and enhancement of the habitats of wildlife species which are (1) characteristic of the northern hardwood and coniferous forests of the Adirondack Park; many of these species being unique, within New York State, to the Adirondack region, and (2) considered to be rare or endangered within New York State. Examples of animals characteristic of the Adirondack region include the beaver, bobcat, fisher, otter, mink frog, broad-winged hawk, blackpoll warbler, and saw-whet owl. Rare and endangered animals are discussed in detail in Section 16B.

PRESERVE KEY WILDLIFE HABITATS

3. Effective animal protection hinges upon the preservation (by such means as a wildlife refuge or undeveloped open space designation) of the habitats which those animals require for their survival, and are therefore referred to as "key wildlife habitats." Examples of such habitats are:

a) Deer wintering yards, which are areas having a distinctive combination of vegetation, topography and hydrological characteristics that offer protection and varying amounts of food for deer when they are forced to seek shelter (yard) because of deep snow and severe weather conditions. Deer yards are typically found in locations offering protection from winter snows and winds, within coniferous forests bordering streams or rivers. Areas with favored deer forage which are in close proximity to deer yards are included as part of the yard. The existence of deer yards may be verified through field observations by personnel from the Department of Environmental Conservation or other wildlife biologists.[1] Although some designated deer yards may not be heavily utilized at present, they have the potential for being used for yarding purposes.

b) Waterfowl nesting, resting, and feeding areas, which are identified by wildlife specialists as being vitally important to the maintenance of both breeding and migratory waterfowl populations. Shallow and deep water marshes are particularly valuable in this respect, especially when contiguous with open water such as rivers and lakes.

c) Major vegetation transition zones (ecotones), which are sites that provide valuable food, shelter, water and rearing areas for a variety of wildlife species, some of which live primarily within the ecotone itself, and others which depend upon the ecotone during certain periods of their life cycle. Examples of major ecotones include the borders of lakes, ponds, rivers, and streams; coniferous/hardwood borders; and the edges of open areas such as fields and plains where they abut forested land.

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[1]Regionally significant deer yards have been identified and mapped by personnel from D.E.C. and these maps are available at their regional headquarters.

MAINTAIN BUFFERS; MINIMIZE CLEARING, DISRUPTION TO HABITAT

4. In addition to minimizing alterations to key wildlife habitats, development should follow these guidelines:

a) Maximize the preservation of mature, natural forests (as opposed to single-species plantations) by such means as clustering of development and minimizing clearing for roads, homes, parking areas, etc.

b) Maintain buffers of undisturbed vegetation around lakes, ponds, rivers, streams, wetlands, and key wildlife habitats.

c) Avoid the following activities in or near key wildlife habitats:

1) Use of pesticides and herbicides and other toxic substances;

2) Introduction of exotic flora and fauna;

3) Disruption of drainage including channelizing the flow of surface and sub-surface waters, the creation of dams and impoundments, modifications to stream and river beds, and wetland filling or draining; and

4) Motorized travel in undeveloped areas (e.g. snow-mobile trails in the vicinity of deer yards or uncontrolled motorboating near loon nest sites and beaver lodges).

TERRESTRIAL WILDLIFE

B) RARE AND ENDANGERED TERRESTRIAL WILDLIFE

Objective: Preserve rare and endangered terrestrial wildlife species.

General Guideline: Locate development and other intensive human activities so as to protect the location and habitats of rare and endangered terrestrial wildlife species and allow for the continuing propagation of these species.

Description:

Rare and endangered terrestrial wildlife include those species (except for fish) considered rare or endangered in New York State, as listed in Appendix F .[1]

An endangered species or subspecies is one whose prospects of survival and reproduction are in immediate jeopardy. Its peril may result from one or many causes -- loss of habitat or change in habitat, over-exploitation, predation, competition, or disease. An endangered species must have help, or extinction will probably follow.

A rare species or subspecies is one that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment deteriorates. Close watch on these species is necessary.

Further Guidelines:

PROTECT HABITATS

1. Some rare and endangered wildlife is protected from hunting or disturbance under existing New York State Environmental Conservation Law. The Adirondack Park Agency Act expands upon this protection by considering the habitats of rare and endangered species and key wildlife habitats as "critical resource areas" within the Park. In addition to the following the guidelines listed in part A of this section (Terrestrial Wildlife, General), development activities must be planned to

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[1]Additional information concerning these species may be found in Technical Report. No. 2 of The Temporary Study Commission on the Future of the Adirondacks, entitled, "Wildlife".

afford maximum protection to those habitats by eliminating or minimizing disturbances within their boundaries and by "buffering" such habitats from adverse impacts.[2]

SUIT BUFFER TO SPECIES ENDANGERED

2. When buffering the entire habitat of an endangered species is not feasible, the amount and location of habitats buffered depends upon the "home range" or area used by the protected species for shelter, food, and breeding.[3] Some species use different habitats for each activity, however, and show seasonal variations in behavior. Small mammals such as moles and shrews normally require less buffering than larger mammals such as lynx or marten. Likewise, birds such as the rusty blackbird and red crossbill may require less buffering of their habitats than larger birds such as the golden eagle or loon.

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[2]Buffers are normally strips of undisturbed land which are specifically designed to provide protection to, and reduce the effects of man's activities upon, a given habitat. Development must be reduced in scope, and may be entirely eliminated from buffer zones. The size and location of buffer zones depends upon the nature of the development proposed and the animal species to be protected. For a discussion of buffer zone design, refer to Topic 23: "Shoreline Development."

[3]For detailed descriptions of wildlife habitats, investigational techniques, and general impact assessment procedures, see Bellrose, Bent, Hamilton, Mosby, Perciasepe, and Peterson in Reference List.

TOPOGRAPHY

Objective: Minimize topographic alterations.

General Guideline: Minimize excavation, cuts and fills and site grading by employing to advantage existing topographic features, and avoid development activities on steep slopes where environmental damage and costly development problems could result.

Description:

Topography is the physical configuration of the land's surface, including such landforms as hills, valleys, ridges, plains and mountains.

Further Guidelines:

PRESERVE TOPOGRAPHIC FEATURES

1. Development activities should not involve major alterations to existing topographic features on the project site. Development proposals should avoid: a) landscaping that involves extensive earth moving or filling; b) large scale leveling or removal of hills, ridges and other high points; c) large scale filling of depressions such as wetlands and ravines.

MINIMIZE CUTS AND FILLS

2. Development activities should be located on existing slopes less than 25%, and preferably on slopes less than 15%, measured over any 100 foot horizontal distance.

3. The number of road or utility line crossings of depressions and high points requiring cuts and fills should be minimized.

4. Road layout should follow existing contours.

5. Cuts and fills which may result from any development activity should be minimized.

WETLANDS

Objective: Preserve the hydrologic, wildlife, vegetational, aesthetic, educational, open space and recreational values of wetlands.

General Guideline: Avoid development in marshes, bogs, swamps and periodically inundated lands or on lands immediately adjacent thereto as such development could result in environmental damage to the marsh, bog, swamp or periodically inundated land.

Description:

Wetlands, as defined by the Adirondack Park Agency Act, as amended in 1976, "means any land which is annually subject to periodic or continual inundation by water and commonly referred to as a bog, swamp or marsh which are either (a) one acre or more in size or (b) located adjacent to a body of water, including a permanent stream, with which there is free interchange of water at the surface, in which case there is no size limitation.

Wetlands are commonly characterized by the presence of distinctive species of vegetation. Shrub swamps are generally characterized by such species as alders (Alnus spp.), willows (Salix spp.), and/or dogwoods (Cornus spp.). Wooded swamps are generally characterized by such species as tamarack (Larix laricina), black spruce (Picea mariana), white cedar (Thuja occidentalis), balsam fir (Abies balsamea), red maple (Acer rubrum), silver maple (Acer saccharinum), elm (Ulmus, spp.) and/or black ash (Fraxinus nigra). Bogs are generally characterized by such species as peat moss (Sphagnum spp.), leatherleaf (Chamaedaphne calyculata), Labrador tea (Ledum groenlandicum), cranberries (Vaccinium oxycoccus and V. macrocarpon), bog rosemary (Andromeda glaucophylla), sedges (Carex, spp.) and/or cottongrass (Eriophorum spp.). Shallow water marshes are generally characterized by such species as cattails (Typha spp.), arrowheads (Sagittaria spp.), bulrushes (Scirpus spp.), spikerushes (Eleocharis spp.), and/or smartweeds (Polygonum spp.). Deep water marshes are generally characterized by such species as pickerelweed (Pontederia cordata), pondweeds (Potamogeton spp.), duckweeds (Lemna spp.) and/or waterlillies (Nymphaea spp.).

Further Guidelines:

AVOID DEVELOPMENT IN WETLANDS

1. Development within wetlands involving the construction of

roads, buildings, pipelines, power or communication tranmission lines, impervious surfacing, or development which includes the dredging or filling of wetlands should be avoided. Such activities are likely to cause adverse impacts upon a number of the resource values attributable to most wetlands.

2. A particular wetland's sensitivity to development can be rated by evaluating such physical, biological, and visual characteristics as the wetland's size, vegetative cover type(s), proximity to open water, water chemistry, visibility from travel corridors, and wetland value to wildlife. Specific development proposals within wetlands must be considered on a site-by-site basis.

AVOID ALTERATION OF WETLAND DRAINAGE PATTERNS

3. Where it is necessary to construct within wetlands, development which would interrupt surface or subsurface wetland drainage patterns (such as roads), should be constructed so as to provide free interchange of water to, through and from the wetland, in keeping with preconstruction conditions.

MAINTAIN BUFFERS BETWEEN WETLANDS AND DEVELOPMENT

4. Development activities adjacent to or in close proximity to wetlands should be buffered from the wetland by a strip of natural, undisturbed vegetation.

   Buffer strips of at least 35 feet should be maintained between any development and any wetland. The size and location of the buffer area will depend on the type of development proposed and upon existing site conditions in and around the wetland.[1]

SEWAGE SYSTEM SETBACK

5. On-site sewage disposal leach fields and seepage pits should be located at least 100 feet from the edge of any wetland. Greater setbacks may be needed to prevent adverse effects upon the wetland, depending upon the specific site conditions involved.

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[1]A more detailed discussion of buffer strips is contained in Topic 23: "Shoreline Development".

WILD, SCENIC AND RECREATIONAL RIVERS

Objective: Protect or enhance the natural qualities of any river designated to be studied for possible inclusion in the State's Wild, Scenic and Recreational River System or those rivers included in the system.

General Guideline: Maintain buffer zones and existing vegetation along these rivers; avoid intensive development within one-quarter mile of such rivers; minimize alterations to such rivers and their banks; and preserve the free-flowing character of such rivers.

Description:

Wild, Scenic and Recreational Rivers are those rivers within the Adirondack Park included in New York State's Wild, Scenic and Recreational Rivers System created by State law in 1972. The Adirondack Park Agency has adopted rules and regulations, effective April 19, 1976, which apply to all new land uses and development proposed for non-state owned lands on or within designated rivers and "river areas" (up to one-quarter mile from each bank).

Wild, Scenic and Recreational Study Rivers are those rivers named by the legislature to be studied for possible inclusion in the system. The potential level of designation (Wild, Scenic or Recreational) was also established. Under the Adirondack Park Agency Act, the Agency has comprehensive "critical environmental area review" jurisdiction within 1/4 mile of such study rivers, except in Hamlet areas.

Further Guidelines:

1. New land use and development within the designated river areas of designated rivers must conform at a minimum to the Wild, Scenic and Recreational Rivers System Regulations adopted by the Adirondack Park Agency.

2. Development within 1/4 mile of study rivers must not jeopardize the eventual classification of the river.

3. As a general rule, development within one-quarter mile of study rivers should meet the standards **established** in the Regulations for the level of designation for which the river is being studied.

4. Development should not include impoundment or diversion of any designated or study river.

SECTION II

DEVELOPMENT ACTIVITIES

OBJECTIVES AND GUIDELINES

NOISE

Objective: Minimize noise insofar as practicable to establish an acoustical environment which promotes the public health and welfare, fosters economic development, allows the continuing propagation and protection of native fauna, and serves in the protection of physical property and other social and biological resource values.

General Guideline: Employ such measures as appropriate site selection, appropriate construction methods and maintenance of natural vegetative cover for a buffering effect; adhere at a minimum to applicable governmental noise level standards.

Description:

Noise means sounds that are considered unwanted by the recipient.

Further Guidelines:

MINIMIZE ADDITIONS TO EXISTING NOISE LEVELS

1. Noise level standards as described in the New York State Department of Environmental Conservation booklet "Local Noise Ordinance Handbook" (Department of Environmental Conservation, 1976, Albany, N.Y.) should not be exceeded.

2. The potential for the following noise-related effects should be assessed prior to project design.

   a. Community and adjacent landowner annoyance and complaint response
   b. Sleep interference
   c. Speech interference
   d. Hearing damage
   e. Changes to the character of the existing acoustical environment, (e.g. introducing mechanized vehicle noise to wilderness sounds)
   f. Perceptible vibrations
   g. Vibrational effects upon structures and sensitive electronic/mechanical instrumentation

3. The following is a list of some noise sources generally associated with development activities

   Construction: Dump trucks, bulldozers, portable air compressors, concrete mixers, jackhammers, generators, piledrivers, rock drills, pumps, backhoes, rock blasting, chain saws, skidders, chippers, crushers, and sorters.

   Operation: Water pumps, truck and/or car traffic, recreational vehicles (snowmobiles, motor cycles, mini-bikes, motor boats and others), lawn and garden equipment powered by internal combustion engines, pets, public address systems, commercial or manufacturing equipment (e.g., saws, chippers, debarkers, forges and others), intensively used recreational areas (e.g. marinas, beaches, playing fields, parking lots), mineral extraction equipment (e.g., bulldozers, backhoes, crushers, sorters), steam whistles, and exhaust fans or pipes.

4. The following noise control measures should be taken when appropriate. Selection and use of any measure should be based on the type and degree of noise control required, and its practical cost effectiveness.

   a. Locate noise sources on areas of the project site where they will have least impact.
   b. Schedule construction work during times or seasons which will minimize disturbance to neighbors or community.
   c. Locate noisy equipment within the site boundary to minimize noise propagated across the property line.
   d. Select the quietest equipment available. Use of electrically operated equipment rather than equipment powered by internal combustion engines is often preferable.
   e. Route or reroute traffic patterns, especially for heavy trucks, away from sensitive accoustical areas.
   f. Surround noise sources (e.g., water pumps, sawmills) with soundproof or sound controlling housings or enclosures.
   g. Place natural or artificial sound barriers (e.g., berms, walls, fences, vegetation) close to sound sources.
   h. Use pneumatic drill silencers, improved mufflers to reduce exhaust noise, silencers to reduce air intake noise, and locate exhaust outlets away from inhabited areas.

5. Special emphasis should be placed on minimizing impacts when locating noise sources close to natural openings, such as fields and bodies of water, due to potential for long distance transmission of noise across such openings.

6. Where they would have an adverse effect on acoustically sensitive areas; restrict certain noise producing activities, for example, by prohibiting or limiting use of motorized recreational vehicles at particular times, in designated areas (e.g., near state land), or altogether.

7. Special consideration should be given to mitigating nighttime noise sources.

8. Assistance in dealing with special noise problems may be obtained from the Department of Environmental Conservation, Bureau of Noise in Albany.

9. For further information on noise and noise control, consult the following publications.

T.J. Schultz and N.M. McMahon. 1971. "HUD noise assessment guidelines". U.S. Department of Housing and Urban Development. Washington, D.C. 30 pp.

U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974. "Information on levels of environmental noise requisite to protect public health and welfare with an adequate margin of safety." U.S. Government Printing Office. Washington, D.C. 33 pp plus appendices.

PESTICIDES & HERBICIDES

Objective: Avoid all use of pesticides, herbicides, and other biocides potentially detrimental to natural systems.

General Guideline: Strictly adhere to applicable regulations regarding type, quantity and techniques of application of pesticides, herbicides and other biocides; and prevent direct application of pesticides, herbicides and other biocides to surface waters or wetlands or in a manner which may cause contamination.

Description:

In general usage, pesticides are thought of as being used to kill or control insects while herbicides are thought of as being used to kill or inhibit the growth of plants.

Pesticides actually include all chemical preparations used to kill or control organisms, both plant and animal. More specifically, pesticides include insecticides, acaricides (for mites), rodenticides (for rodents), herbicides (for herbaceous plants), arborcides (for trees and other woody plants), and fungicides (for fungi).

Biocide is essentially synonymous with pesticide and refers to all chemical preparations that may kill or control any plant or animal species with which it comes in contact, including target and non-target organisms.

These chemicals are used on home gardens and lawns, on entire towns for control of black flies and mosquitoes, on golf courses or other open space recreational areas, on power line rights of way, and to control nuisance aquatic vegetation and populationsof undesirable fish.

Further Guidelines:

AVOID WIDESPREAD AND PERSISTENT USE OF BIOCIDES

1. Dependence upon the use of pesticides and herbicides for the control of nuisance organisms over large areas or for extended periods of time is considered to constitute an adverse environmental impact and should be avoided. Blackfly, mosquito, and similar spray programs which are conducted on a town or regional basis are regulated by the Department of Environmental Conservation. In some situations short-term use of biocides on projects such

as vegetation control on cleared rights-of-way may be a valuable aid to accomplishing project goals. Continued use of biocides as control agents, however, is not normally required and in fact may prove counterproductive.

ALTERNATIVES PREFERRED

2. Non-specific, broad-spectrum biocides, such as chlorinated hydrocarbons should not be used where alternatives are available, unless greater damage to the environment would result. Examples of alternative methods include the introduction of predators, parasites and pathogenic organisms which are target-specific for the plants or animals in question.

   Chemical methods which appear to be more acceptable than the use of broad-spectrum, non-specific biocides include the use of plant and animal hormones such as sex attractants, growth regulators and behavioral modifiers.

CAREFUL SELECTION AND USE OF CHEMICALS

3. Chemicals which are applied should be as target-specific as possible, be applied at times when they will be most effective against the target species, and be applied in amounts and concentrations not exceeding recommended dosages.

PERMITS REQUIRED FOR AQUATIC BIOCIDES

4. A permit is required from the Department of Environmental Conservation to use chemicals for the control or extinction of aquatic vegetation or undesirable fish species and for the control or elimination of aquatic insects in or over any waters in the Park.

SEWAGE DISPOSAL

ADIRONDACK PARK AGENCY

GUIDELINES FOR ON-SITE SEWAGE DISPOSAL SYSTEMS

March 25, 1991

This document sets forth guidelines for the design and installation of on-site sewage disposal systems for projects requiring a permit from the Adirondack Park Agency. These guidelines apply to pre-existing lots and lots on which a system is being replaced, but, in these cases, alternative systems may be allowed (see Pre-Existing Lots and Failing Systems, p. 6). These guidelines supersede Chapter 24 (Sewage Disposal) of the Adirondack Park Agency publication Development in the Adirondack Park, 1977. These guidelines deal with site evaluation, design specifications and installation requirements for both individual and small multi-family on-site sewage disposal systems with a flow rate of less than 1000 gallons per day.

LEGAL EFFECT OF THESE GUIDELINES

These are guidelines, not rules. Failure to meet them will not automatically result in disapproval of an application. Each application will be judged on its particular merits, including all other aspects of its impact on the resources of the Adirondack Park and mitigation measures or offsets proposed. If these guidelines are not met, the Project Review Officer assigned to the application will consult with the Agency's technical staff, and may, depending on the individual case, recommend that a public hearing be held to further examine sewage disposal methods.

SITE EVALUATION AND RESOURCE REQUIREMENTS

The soil and slope factors listed here are described in detail in the Adirondack Park Agency Soils Handbook (August 1990). To ensure the information provided to the Agency is consistent, the Handbook prescribes standard methods for performing percolation tests and for describing soils.

All applications for new development and subdivisions requiring a permit from the Adirondack Park Agency and subject to these guidelines must demonstrate that each proposed building lot meets these minimum site requirements.

Flood Areas:

No on-site sewage disposal systems shall be allowed in areas within a 10-year flood plain.

Horizontal Separation Distances:

The table below sets forth the minimum horizontal separation distances required, measured from the finished graded edge of the sewage disposal area (see System Extent, p. 4) to each listed feature:

Minimum Horizontal Separation Distances	
Individual Drilled Well	100 feet
Community Drilled Well	200 feet
Dug Well	150 feet
Wetland	100 feet*
Lake George	200 feet
Other Waterbodies	100 feet**
Property line	25 feet
Dwellings	20 feet
Soil Depth to: Bedrock ≤48" Impervious Layer ≤48" SHGWT ≤24"	25 feet 25 feet 25 feet***
25% Slopes	25 feet

* May require a greater separation distance where low nutrient bogs are present.

** The shoreline setback requirement includes both:

1. Intermittent streams with a defined bed and bank, regardless of navigability (9 NYCRR 575.1 [c]).
2. Within 200 feet of the shoreline of a lake, pond, river or stream: if the percolation rate is 0 to 3 minutes per inch, a leaching facility will not be permitted (9 NYCRR Appendix Q-4).

*** Seasonal High GroundWater Table.

For features not listed in the above table, use Table 2 in the Design Standards for Wastewater Treatment Works 1988, NYS Department of Environmental Conservation, 1980, revised 1988.

Slope:

Conventional in-ground absorption trenches shall only be permitted on natural slopes of 15% or less. All other acceptable on-site sewage disposal systems shall only be permitted on natural slopes of 8% or less. For the purpose of these guidelines, the slope is measured as the ratio of the maximum vertical rise or fall of the land in 50 feet of horizontal distance and is expressed as a percentage.

Soil Percolation Rate:

In order to be approved for conventional in-ground absorption trenches or beds or for shallow absorption trenches, soil percolation rates shall be between 1 to 60 minutes per inch. No on-site sewage disposal systems shall be allowed in soils where the percolation rate is less than 1 minute per inch or exceeds 60 minutes per inch. Also, within 200 feet of the shoreline of a lake, pond, river or stream: if the percolation rate is 0 to 3 minutes per inch, a leaching facility will not be permitted (9 NYCRR Appendix Q-4).

Note: Aquifer Protection in Fast Perc Soils

In areas with percolation rates faster than 10 minutes per inch that overlie aquifers designated by New York State as Principal Aquifers, or other aquifers that meet the criteria defined in NYS Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 2.1.3, Primary and Principal Aquifer Determinations, April 1, 1987, additional protection will be required to prevent degradation of groundwater quality. In such cases, the absorption system design shall be modified to provide enhanced treatment of the wastewater by the soil system, or additional treatment provided prior to subsurface discharge. The Agency staff should be consulted before substantial sums are spent on design.

Soil Test Pit:

A soil test pit is required to examine the soil to a depth of at least 7 feet or 5 feet below the bottom of the proposed system, whichever is deeper. Soil test pits must be described by a qualified soil scientist as defined by the New York Department of Agriculture and Markets Rules and Regulations (1 NYCRR 370.2 [v]).

Soil Depth to Seasonal High Groundwater Table (SHGWT):

The depth of the undisturbed and natural soil, measured from the soil surface (minus the surface organic forest floor layers) to the top of the seasonal high water table must be 24 inches or more. This depth shall also be determined by a qualified soil scientist.

Soil Depth to Bedrock or Other Impervious Layer:

The depth of the undisturbed and natural soil, measured from the soil surface (minus the surface organic forest floor layers) to the top of bedrock or other impervious layer must be 48 inches or more (72 inches if the bedrock is fractured). In addition, the bottom of any sewage disposal system shall be at least four feet above bedrock or impervious strata. An impervious strata is defined as any layer with a percolation rate of slower than 60 minutes per inch.

Filled Areas or Disturbed Sites:

Sewage disposal systems are generally not allowed on sites where the natural soil materials have been disturbed by excavation, removed or covered by more than 12 inches of fill. Where proposed on such sites, intensive sub-surface investigation will be required. The Agency staff should be consulted prior to conducting such an investigation.

DESIGN STANDARDS

Design Flow and Replacement Area:

All proposed lots for new subdivisions subject to these guidelines are required to have an area of suitable site conditions large enough to accommodate a sewage system designed for a minimum of 500 gallons per day flow rate (4 bedroom house) and a reserve area capable of installing a 100 percent replacement system according to the specifications in this document.

System Extent:

The sewage disposal area includes the area of the leaching facilities and, if required by the design, the area covered by fill used to grade around the system and the up-slope diversion ditch (curtain drain). This area is the finished graded edge of the sewage disposal system used for the measurement of horizontal separation distances.

Piping Distances:

In general, the piping of sewage to an on-site sewage disposal system serving one or two single family dwellings a distance of 250 feet or more or across wetlands, waterbodies, right-of-ways, property lines or a soil with any limiting feature, is not allowed. Review of such proposals will be on a case-by-case basis and alternative lot configurations will likely be suggested.

Mounding Analysis:

Where site conditions are marginal, an analysis will be required to predict the extent of groundwater mounding that will occur when the system is in operation and how this discharge will affect groundwater levels down-gradient.

Other:

All other standard design features are the same as in Sewage Standards for Wastewater Treatment Works 1988, DEC, revised 1988, unless otherwise noted herein.

ACCEPTABLE SEWAGE DISPOSAL SYSTEMS for New Development

The sewage disposal systems defined herein are the same systems used in Sewage Standards for Wastewater Treatment Works 1988, DEC, revised 1988, and are described in further detail by that publication. The design standards in that publication are applicable, but the site conditions used herein may in some instances be more restrictive, and represent the minimum site conditions necessary in order to recommend the approval of a lot for new development without a public hearing.

Conventional Absorption Trenches and Beds:

Conventional Absorption Trenches and Beds are in-ground sewage disposal systems which may be used only with the following site conditions:

Percolation rate:	1 to 60 minutes/inch
Slope:	≤15% for Trenches
	≤8% for Beds
Depth to SHGWT:	≥48 inches
Depth to Bedrock:	≥72 inches

Such systems are constructed wholly within the existing native soil, yet are able to maintain a 24 inch vertical separation distance between the bottom of the system and the top of the seasonal high water table, and 48 inches to bedrock. Conventional absorption beds differ from trenches in that they are up to 15 feet wide, while trenches are generally 2 feet wide. Cross-sections for trenches and beds are from the 1988 DEC publication set forth in Appendix A and Appendix B.

Shallow Absorption Trench:

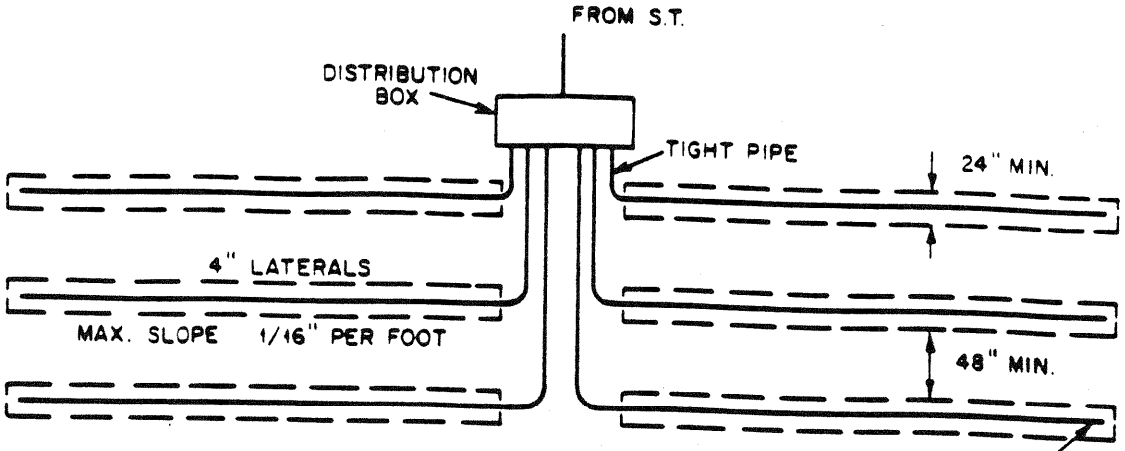
Shallow Absorption Trenches are sewage disposal systems which may be used only with the following site conditions:

Percolation rate:	1 to 60 minutes/inch
Slope:	<8%
Depth to SHGWT:	24 to 48 inches
Depth to Bedrock:	≥48 inches

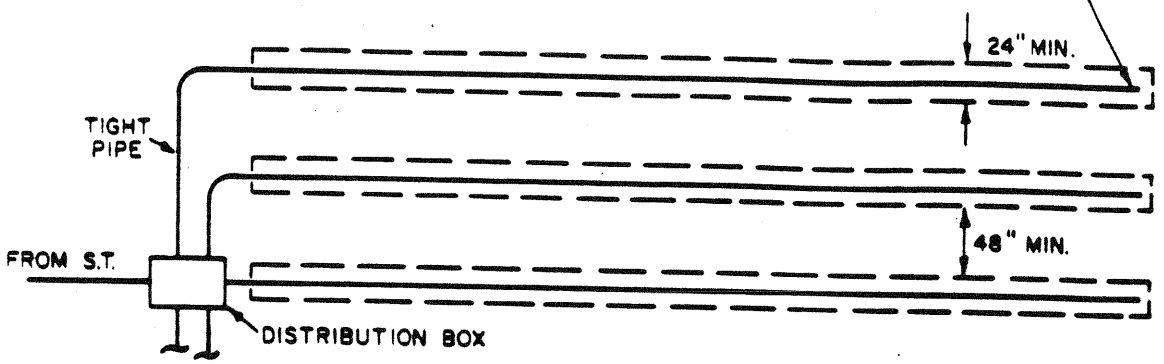
Such systems are constructed with the bottom of the system wholly within the existing native soil. Fill is required to grade over the sides and top of the system. The total height of the system above the original soil surface is 1 to 24 inches, depending on the system design, slope and depth to the seasonal high water table. A cross-section from the 1988 DEC publication is set forth in Appendix C. All shallow absorption trenches shall be designed and certified as to their proper installation by a licensed Professional Engineer.

PRE-EXISTING LOTS and FAILING SYSTEMS

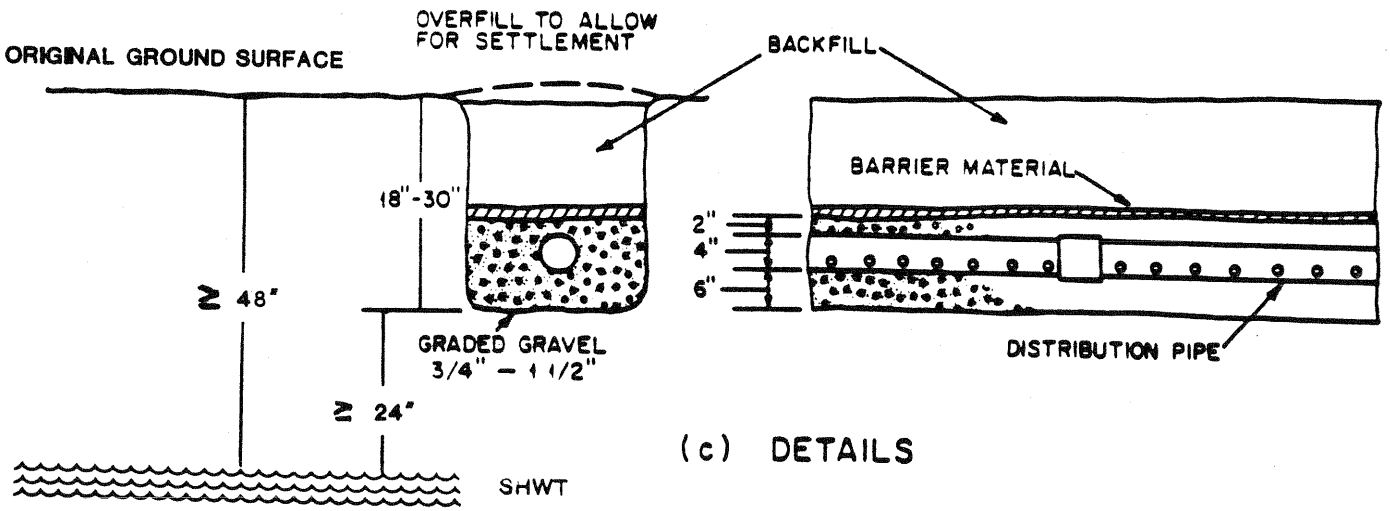
If a pre-existing lot does not meet the minimum site requirements in this document, Agency staff will consider, on a case-by-case basis, acceptability of alternative systems. If an existing on-site sewage disposal system is failing, Agency staff will consider proposals of demonstrated new technology or alternative systems, such as, but not limited to mounds or non-waterborne systems, as designed by a licensed Professional Engineer. Holding tanks will not be allowed for year-round usage on a permanent basis, however.



(a) SLOPING GROUND

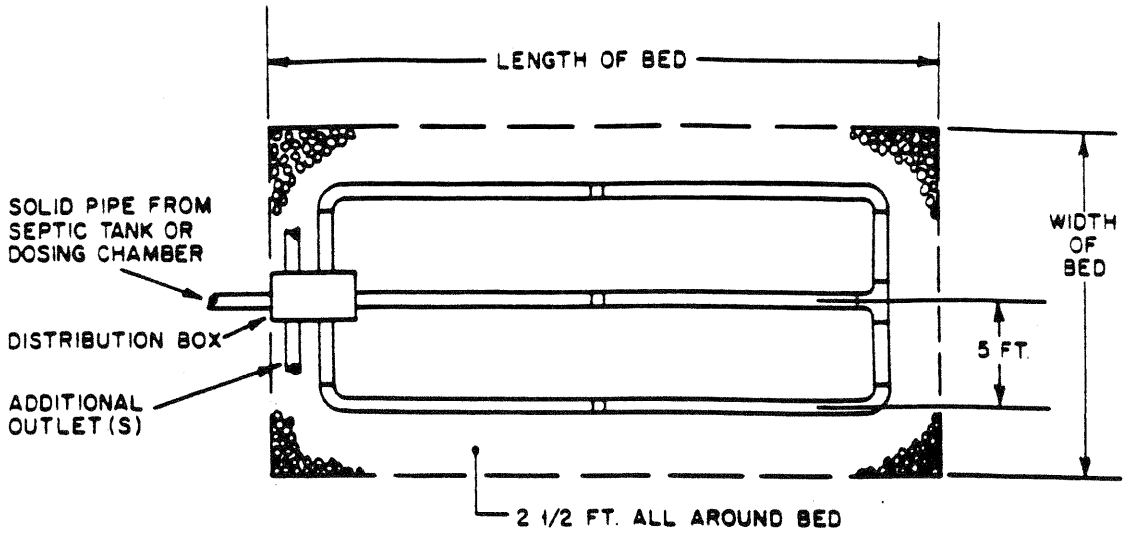


(b) LEVEL GROUND

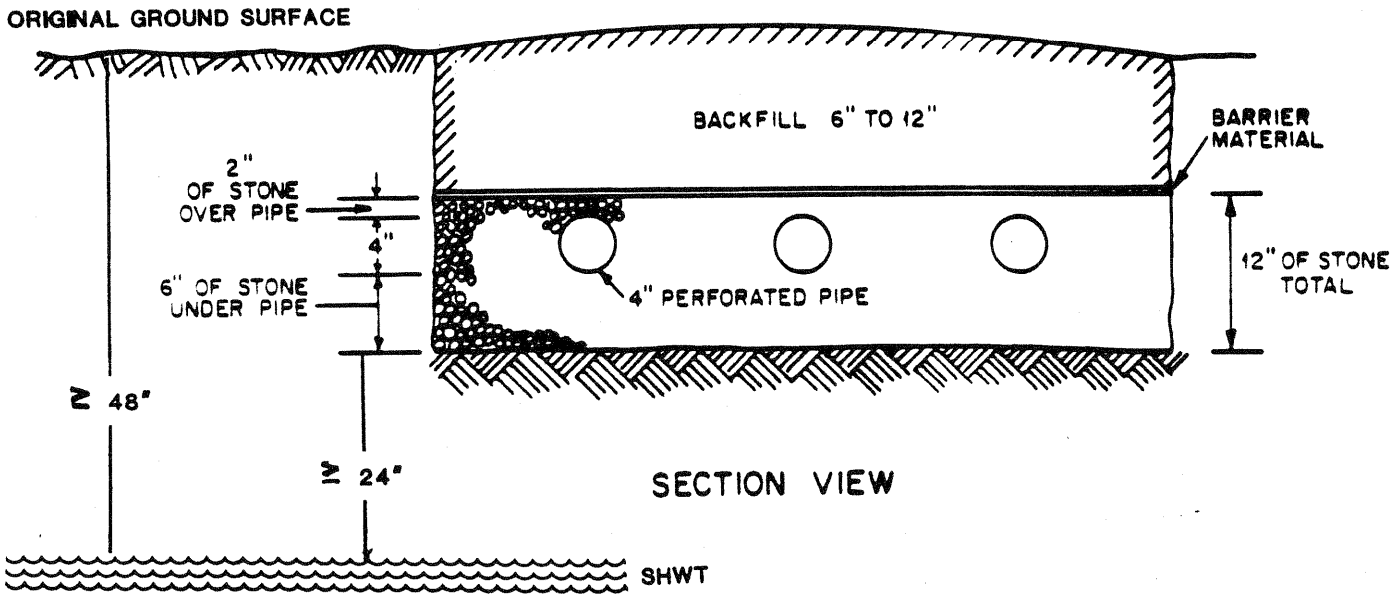


(c) DETAILS

APPENDIX A CONVENTIONAL ABSORPTION TRENCH

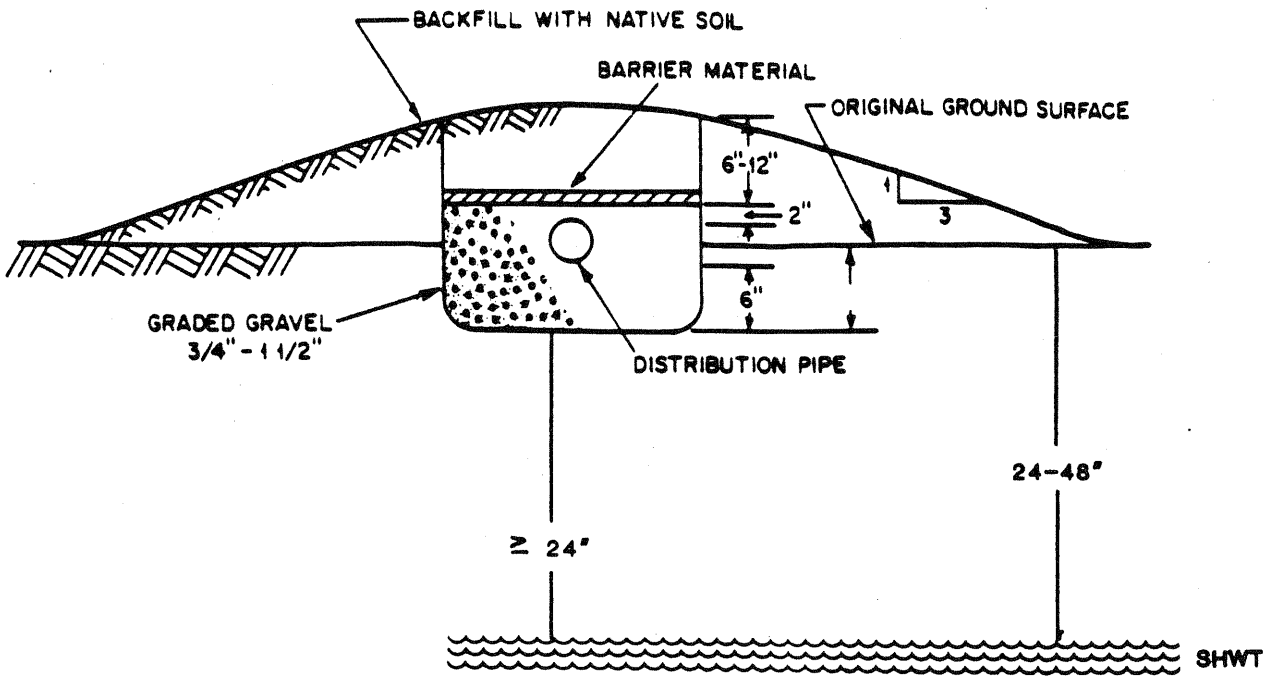


PLAN VIEW



SECTION VIEW

APPENDIX B CONVENTIONAL ABSORPTION BED



SECTION VIEW

APPENDIX C SHALLOW ABSORPTION TRENCH

SHORELINE DEVELOPMENT

Objective: Design and construct development along shorelines so as to maintain their existing aesthetic and ecological characteristics and to avoid all significant impairment of these qualities.

General Guideline: Adhere at a minimum to the shoreline restrictions of the Adirondack Park Agency Act and the provisions of the Environmental Conservation Law and all local laws; maximize preservation of undeveloped shorelines by such methods as clustering and preservation of shoreline vegetation; minimize construction of docks and boathouses on shorelines; minimize aesthetic alterations to shorelines as viewed from surface waters and surrounding areas.

Description:

Shoreline, as defined in the Adirondack Park Agency Act, "means that line at which land adjoins the waters of lakes, ponds, rivers and streams within the Adirondack Park at mean high water." Shoreline is measured along the mean high water line, which is the planimetric (flat, horizontal) boundary of a lake, pond, river or stream that results from a long-term average of the peak annual water elevation of such water body. Shoreline development refers to any construction or other activity which materially changes the use or appearance of land in the immediate vicinity of the shoreline. Examples of shoreline development include seasonal and permanent residences, roads, parking areas, clearing of vegetation, boathouses, docks, beaches, marinas, boat launching ramps, retaining walls, breakwaters, bath houses, filling, dredging, channelization, culverts, bridges, storm drainage outlets, removal of aquatic vegetation, cattle watering, and use of fertilizers, pesticides and herbicides.

Further Guidelines:

SHORELINE RESTRICTIONS

1. All development must comply with the shoreline restrictions contained in Section 806 of the Adirondack Park Agency Act. These include minimum lot widths, minimum setbacks of buildings and on-site sewage disposal systems, and maximum amounts of vegetation clearing. Many types of shoreline development require a permit from the Department of Environmental Conservation.

2. Development should be avoided or minimized along areas of shoreline with high aesthetic value or biological importance (e.g., fish spawning grounds, weed beds, food source areas). Greater protection of shorelines can be accomplished, for example, through use of clustering, creation of green belts, prohibitions on construction of boat houses, rafts and docks, stricter vegetation removal controls, increased setbacks of buildings, limitations on building materials and color schemes, and others. Legal mechanisms for implementation of these restrictions include deed covenants, and creation of homeowners' associations.

LOCATION OF SHORELINE DEVELOPMENT

3. Development in wetlands adjacent to and contiguous with navigable waters should be avoided and will generally not be permitted.

4. Development should be located in those areas which, due to slope, vegetational screening, distance from the shoreline and existing visual qualities will have the least aesthetic impact as viewed from adjacent surface waters and public travel corridors.

5. Filling, grading, lagooning, dredging, earth moving activities, and other land use activities should be conducted in such a manner to prevent, to the maximum extent possible, erosion and sedimentation of surface waters.

BUFFER STRIPS

6. Sites where development would result in the exposure of substantial areas of mineral soil or duff should be located such that an undisturbed natural buffer strip is retained between the exposed soil and the mean high water mark of any surface water body. The size and location of the buffer area will depend on the type of development proposed and upon existing site conditions in and around the shoreline. As a general rule, a minimum width of 35 foot should be sufficient. Relatively larger buffers are needed if any of the following conditions exist between the proposed development activity and the shoreline:

   a. Shallow depth to ground water
   b. Shallow depth to bedrock
   c. Highly permeable, impermeable or erodible soils
   d. Steep slopes in the direction of the water body. Since erosion potential increases with increasing slope, the width of the buffer strip should vary according to the average slope of the land. The table below is a guide to minimum buffer widths needed on various slopes.

Average Slope of Land Between Exposed Soil and Mean High Water Mark (percent)	Width of strip between exposed soil and Mean High Water Mark (feet along surface of ground)
0	35
10	45
20	65
30	85
40	105
50	125
60	145
70	165

e. The scale of the development is large (i.e. involves a large surface area) as compared to the size of the surface water body or to the area of its contributory drainage.
f. A significant amount of the surface and/or subsurface drainage to the surface water body will pass through the developed area.
g. The development will contain a high percentage of impervious surface.
h. Substantial development has already occurred in close proximity to the surface water body.
i. The surface water body has relatively minimal outflow as compared to the amount of water flowing into the surface water body.
j. The surface water body contains rare or endangered plant or animal species or is a key wildlife habitat.

CLEARING OF VEGETATION

7. Removal of vegetation should comply, at a minimum, with the shoreline restrictions contained in Section 806 of the Adirondack Park Agency Act. These restrictions apply specifically only to navigable rivers and streams, but should be complied with along non-navigable streams and wetlands as well. Section 806(3) states that:

> "The removal of vegetation, including trees, shall be permitted on shorefront lots provided the following standards are met: (a) Within thirty-five feet of the mean high water mark not more than thirty percent of the trees in excess of six inches diameter at breast height existing at any time may be cut over any ten-year period. (b) Within six feet of the mean high water mark no vegetation may be removed, except that up to a maximum of thirty percent of the shorefront may be cleared of vegetation on any individual lot. This provision shall be adhered to in addition to (a) above. (c) The above cutting standards shall

not be deemed to prevent the removal of diseased vegetation or of rotten or damaged trees or of other vegetation that present safety or health hazards."

In addition, the following guidelines apply:

a. Cutting of the above-mentioned 30 percent should not create a contiguous clear-cut opening in this strip greater than thirty (30) feet in length for every one hundred (100) feet of shoreline (measured along the mean high water mark).
b. In the remaining 70 percent length of this strip (distance measured along the mean high water mark), cutting should leave sufficient cover to screen cars, dwellings and accessory structures (except boathouses) as seen from the water.
c. Natural shrubbery should be preserved to the extent practicable, and where removed it should be replaced with other vegetation that is equally effective in retarding runoff, preventing erosion and preserving natural beauty.
d. Any paths, roads or passages within the cutting strip should be so constructed or surfaced as to be effective in controlling erosion.
e. Removal of shoreline vegetation should be limited to thinning, pruning and selective cutting for a view, and access to facilities such as beaches and docks.

DOCKS, BEACHES AND BOATHOUSES

8. Construction of docks, beaches, boat houses, and other activities having an adverse impact on the water side of the shoreline should be prohibited by deed restriction (or other appropriate means) along shorelines of significant biological importance such as fish spawning areas and beds of aquatic vegetation.

9. Community docks, rafts, launching areas, and beach areas should be provided for subdivisions containing more than five to ten shoreline lots. Construction of these facilities should be limited or prohibited by deed restriction on the individual lots. Provision should be made for access of back-lot owners to the shorefront.

10. Where community dock and beach areas are to be provided, they should be adequately separated to minimize use conflicts.

BREAKWATERS AND JETTIES

11. Breakwaters or jetties should not be placed in locations where substantial beach erosion or accumulation of beach

materials and sediment is likely to occur.

MARINAS

12. Marinas and harbors should be located in deeper water areas to minimize the need for dredging and in natural inlets to avoid the use of breakwaters. They should not be located in areas where significant shoreline erosion is likely to occur, in or adjacent to wetlands or areas of high biological or aesthetic value, or in areas wehre there is no demonstrable public need for a new marina. Floating piers or piers on pilings should be used to provide access to boats, rather than providing access by dredging. If dredging is permitted, spoil material should not be deposited in lake or river water. Restrooms, pump-out facilities for boat sewage receptacles, and trash receptacles for other boat wastes should be provided. Boat washing facilities should be connected to a sewer system with appropriate traps, or on acceptable alternative provided. All buildings, including sales offices, showrooms, stores, storage buildings and repair buildings should be set back from the shoreline to the extent possible. A rail-winch, tractor lift, or other transport system should be used, where feasible, to remove larger boats from the water for repairs or storage.

WATER SURFACE USE

13. Where surface water use conflicts (e.g., fishing vs water skiing) and/or shoreline damage (e.g., wave action) are likely to occur, as a result of shoreline development, appropriate surface water use controls should be implemented. These could include:

    a. General use restrictions prohibiting or limiting certain types of use on a water body at all times.
    b. Time restrictions limiting water skiing and power boating during certain hours.
    c. Regulations to prohibit boating, water skiing, and other uses in protected areas (such as swimming areas).
    d. Regulations to prevent operation of boats at greater than specified speeds within a certain distance from shore.
    e. Directional controls for water skiing or boating.

14. In cases where a project site surrounds or nearly surrounds a lake or pond:

    a. The use of outboard motors should be restricted. On lakes with a surface area less than one hundred acres, the use of outboard motors may need to be prohibited,

and on lakes of greater area motors should be restricted in terms of horsepower, time of use, and areas in the lake where they will be allowed. These restrictions should be developed in such a manner so as to allow maximum enjoyment by people using the lake and to minimize conflicts between different lake uses.

b. A substantial percentage of lakeshore should be left undeveloped.

SIGNS

Objective: Avoid signage that detracts from aesthetic and scenic qualities.

General Guideline: Limit signs to the extent necessary to adequately inform viewers concerning the activities to which they relate; use signs which are appropriate to the character of the area in which they are located; avoid use of signs of excessive size and height that are insufficiently set back from natural and man-made travel corridors, and of signs containing moving parts or flashing lights.

Description:

Sign includes any sign, billboard, advertising structure or similar device intended to advertise, attract attention, or communicate a notice with regard to any business, commercial, industrial, tourist or other activity, and which is visible to the general public from an out-of-doors position, including any surface on which a name, text, device, signal, ornament, logotype or advertising matter is made visible. The meaning of sign includes without limitation, statues, models, and other ornamental figures.

Further Guidelines:

CONFORM TO SIZE, SET BACK AND DESIGN STANDARDS

1. Signs should conform to standards limiting the size number and location of signs which are listed in Adirondack Park Agency "Standards for Private Signs" (see page 24-2).

2. Signs should be designed and constructed to avoid conflict with the character of the area in which they are situated.

   The following design elements are encouraged:

   a) Use of natural construction materials (e.g. stone, brick, wood)

b) Simplicity of design and color scheme

c) Incorporation of few component parts

d) Use of indirect illumination

e) Landscaping

3. A permit is required from the Department of Environmental Conservation for all off-premises signs not located within incorporated villages.

Revised as of 5/20/77

ADIRONDACK PARK AGENCY

STANDARDS FOR PRIVATE SIGNS

1. The Purpose of These Standards

The purpose of these standards is to provide a coordinated, uniform and consistent approach for the review by the Adirondack Park Agency of signs proposed to be erected or maintained on-site in association with projects subject to Agency regional project review under the Private Land Use and Development Plan, taking into consideration the objective of the Adirondack Park Agency Act to protect the scenic, aesthetic and open space resources of the Park.

2. Application of These Standards

These standards shall govern the Agency in its review of all private signs associated with projects subject to Agency regional project review jurisdiction which are proposed to be erected or maintained on-site in association with such activities as business, commercial, industrial and tourist, including but not limited to automobile service stations, junkyards, mineral extraction uses and structures, public and private sand and gravel pits, tourist accommodations, tourist attractions, residential subdivisions, campgrounds, trailer parks and mobile home courts.

These standards do not apply to off-premise signs, which are regulated by the Adirondack Park Sign Law, administered by the Department of Environmental Conservation.

3. Definitions

"Sign" means any inscribed surface, pattern of artificial lighting, pictorial or symbolic ornament, emblematic structure, banner, fluttering apparatus, or other visually communicative or expressive device that is visible from an out-of-doors position and is used to advertise or call the public's attention to any business, activity, object for sale or lease, person or place, or to bear any kind of message. The meaning of "sign" shall also include any sign currently in disuse but still visible from an out-of-doors position, and any frame or support structure erected specifically to bear or uphold a sign. The meaning of "sign" shall not include any sign erected by the federal, state,

county or local government or any department or agency thereof, any poster placed temporarily to advertise a civic event or an event sponsored by a house of worship, school, library, museum, social club, or society, or any patriotic flag or banner not used for commercial advertising purposes. The meaning of "sign" shall also not include any sign having a sign area no greater than 3 square feet that is used simply to mark property boundaries, give directions regarding roads or trails, exclude hunting, fishing, or other activities, warn of any hazard or condition, denote the name and address of the occupants of the premises on which the sign is located, or advertise the availability of the premises or some portion thereof for sale or lease.

"Sign area" means the total area of all faces or surfaces of a sign anywhere upon which writing or any illustrative, emblematic, or other artistic or expressive matter appears, or, in cases where writing or illustrative, emblematic, or other artistic or expressive matter is not set against any face or surface, the total area within a single continuous rectangular perimeter enclosing the extreme limits of such writing or illustrative, emblematic, or other artistic or expressive matter. The sign area of a sign having more than one face or surface on which writing or illustrative, emblematic or other artistic or expressive matter appears shall be the total area of all such faces or surfaces; but if a sign consists of two such faces or surfaces placed back-to-back, the sign area of the side having the greater sign area shall constitute the total sign area. The sign area of a group of connected or related signs shall be the sum of the sign areas of the signs belonging to it.

"Erect" means to build, construct, alter, enlarge, relocate, attach, hang, place, affix, or maintain any sign, and includes the painting of wall signs.

"Luminous sign" means an incandescent or other sign which gives forth its own light, or any transparent or translucent sign through which artificial light is emitted, including, without limitation, any neon sign, fluorescent sign, or advertising light display.

"Level of natural ground" means the level of ground prior to any grading or fill done primarily for the purpose of erecting any sign or raising the level of a sign's allowable height.

4. Number of Signs

a. Not more than 2 signs may be erected or maintained advertising or otherwise relating to a single business or activity, excep for directional signs that do not exceed 2 square feet in sign area and are limited to such texts as "Office", "Entrance", "Exit", "Parking" and "No Parking".

b. Not more than one pole sign may be erected or maintained upon the premises of any gasoline or other automotive service station.

5. Design and Location of Signs

a. No sign shall be illuminated by or contain flashing, intermittent, rotating, or moving light or lights. All luminous signs, indirectly illuminated signs, and lighting devices shall employ only lights emitting light of constant intensity.

b. No luminous sign, indirectly illuminated sign, or lighting device shall be placed or directed so as to cause glaring or non-diffuse beams of light to be cast upon any public street, highway, sidewalk, or adjacent premises, or otherwise to cause glare or reflection that may constitute a traffic hazard or nuisance. No sign shall in its construction employ any mirror or mirror-like surface, nor any day-glowing or other flourescent paint or pigment.

c. No sign or part thereof shall contain or consist of any banner, pennant, ribbon, streamer, spinner or other similar moving, fluttering, or revolving device. The said devices, as well as strings of lights, shall not be used for advertising or attracting attention whether or not they are part of any sign. No sign or part thereof may rotate or move back and forth.

d. No sign shall contain any neon or similar lighting.

e. No sign shall be placed upon or be supported by any water body or any tree, rock, or other natural object rather than the ground.

f. No sign shall be erected or maintained upon the roof of any building or structure.

g. No motor vehicle on which is placed or painted any sign shall be parked or stationed in a manner primarily intended to display the sign.

h. No sign shall project more than 3 feet from the wall of any building, nor shall any sign project from the roof of any building or into any public way.

i. No sign shall be erected or maintained within the right-of-way, nor within 10 feet of the road bed of any public street or highway; nor shall any sign exceeding 20 square feet in the sign area to be erected or maintained within 20 feet of the road bed of any public street or highway. But these minimum setback distances shall not apply to signs erected upon any building entirely housing the business or activity with which the signs are principally associated. For the purposes of this provision, the road bed shall mean the trafficable portion of a road, street,

or highway, bounded on either side by the outer edge of the shoulder or guardrail, whichever extends farthest. Where there is no shoulder or guardrail, there shall be deemed to be a shoulder extending four feet from the outer edge of the pavement or unpaved traffic lanes.

j. No sign shall be erected or maintained more than 200 feet from the business or activity with which it is principally associated. For the purposes of this provision, the location of a business or activity shall include all of the principal private access road connecting the actual place of that business or activity with a public street or highway.

k. No sign shall be erected or maintained in a location primarily directed at travelers upon the Adirondack Northway (Interstate Route 87).

6. Size and Height of Signs

a. No sign shall be erected or maintained having a sign area greater than 40 square feet. No luminous sign shall be erected or maintained having a sign area greater than 15 square feet.

b. If two signs are erected or maintained with respect to a given activity, the total sign area of the two signs shall not exceed 60 square feet.

c. No pole sign erected or maintained upon the premises of any gasoline or other automotive service station shall have a sign area greater than 15 square feet.

d. No sign shall exceed 20 feet in overall height, measured from the highest level of natural ground immediately beneath the sign to the highest point of the sign or the supporting structure thereof.

7. Number of Permitted Signs Where More Than One Principal Activity is Being Conducted

Notwithstanding the standard governing the number of signs permitted to be erected or maintained on any parcel of real property set forth in Section 4 hereof the following standards shall guide the Agency in its review of all private signs associated with projects described in Section 2 hereof when more than one principal activity is proposed to be conducted on a separate and discrete basis upon the parcel of real property associated with the project, such as in the case of a shopping center or other multiple commercial use facility.

a. A single free-standing sign not in excess of 40 square feet in sign area or more than 20 feet in height may be erected identifying the center or facility as a whole but shall not contain advertising matter.

b. One individual wall sign not in excess of 30 square feet in sign area may be erected for each separate principal activity such as a shop or store.

c. An overall sign design plan for any such center or facility subject to Agency regional project review jurisdiction shall be required, which shall include the sign design plan or plans for each principal activity therein, and shall reflect a reasonable uniformity of design, lettering, lighting and material.

8. Nonconforming Signs

If a regional project subject to Adirondack Park Agency review is proposed for a parcel of real property upon which an existing sign is located, and the said existing sign is associated with the principal activity which is the subject of the proposed project but does not conform to these standards, the Agency may require that the said nonconforming sign be brought into compliance herewith within a reasonable period of time not to exceed six years. Such requirement that the nonconforming sign be brought into compliance herewith may entail the compulsory elimination of the sign upon the termination of a period calculated to be the remaining economic life thereof based upon actual depreciation schedules, but in any event not to exceed six years.

9. Residential and Other Non-Business Uses

In the case of residential uses and other non-business oriented uses, the Agency will apply these private sign standards, except that only one sign may be erected or maintained upon a parcel of real property, the sign area may not exceed 8 square feet, and the overall height of the sign may not exceed 6 feet.

SITING AND CONSTRUCTION OF BUILDINGS

Objective: Design, site and construct buildings to best serve their intended functions and to minimize impact on existing natural and public resources.

General Guideline: Blend buildings with existing topography and their surrounding environs; avoid steep slopes; minimize grade alterations; and avoid complex and costly engineering solutions of site problems with potentially excessive environmental impacts.

Description:

Buildings refer to all inhabited and uninhabited structures proposed to be placed, constructed or substantially modified on a project site.

Construction of buildings includes the materials and methods used in conjunction with the building itself as well as any accessory activities associated with such buildings including site preparation (clearing, grading, excavation), landscaping, driveway construction, and utility installation.

Siting refers to the specific location and orientation of buildings on particular lots and the relationship of these structures to each other, to the natural landscape, and to the general design of the development as a whole.

Further Guidelines:

MINIMIZE SOIL DISTURBANCE AND EROSION

1. Buildings should not be sited on slopes exceeding 25 percent or on soils which exhibit:

   a. high erodibility
   b. shallow depth to ground water
   c. shallow depth to bedrock
   d. low bearing strength
   e. low shear strength

2. Cutting or filling should generally not exceed 5 feet in depth or height. On north-facing slopes, areas with a high water table, or areas that are predominantly shaded, this limit should be reduced.

3. Side slopes of cuts and fills should not be steeper than

2:1 for coarse textured soils or 4:1 for fine soils. Internal drainage of cut and fill slopes and mechanical stabilization measures such as retaining walls, stone blanketing or riprap should be used where necessary.

4. All cuts and fills and areas where the natural vegetation has been removed or destroyed should be successfully stabilized and revegetated as soon as possible within the growing season when the disturbance to soils occurs. See Appendix B "Conservation Plantings on Critical Erosion Areas".

USE ENVIRONMENTALLY SENSITIVE SITING AND DESIGN METHODS

5. Buildings with basements generally should not be located on soils where the seasonal high water table or bedrock is within five feet of the surface.

6. Building materials and color schemes should harmonize with their setting and be compatible with neighboring land uses.

7. Use of vegetative screening (e.g. uncut buffer strips or selective plantings), limitations on the clearing of vegetation, and adequate setbacks of buildings should be used to minimize adverse visual impacts.

8. Comply with local ordinances and regulations and the shoreline setbacks of the Adirondack Park Agency Act.

9. Driveway access and grades should conform in general to the terrain, but should not exceed a 12% average grade over any 150 foot length, should not exceed 15% over any length, and should not exceed 3% within fifty feet of the street pavement or driving surface, as measured along the center line of the driveway. A permit is required from the Department of Transportation for all new entrances onto state highways. In addition to those driveway entrance requirements contained in Topic 28: "Streets and Roads", the following DOT guideline[1] should also apply, and to all roads in addition to state highways. A driveway should be located so as to provide:

   a. The most favorable vision, grade and alignment conditions for the motorist using the proposed driveway and highway.

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[1] N.Y. State Department of Transportation, Undated. Policy and standards for entrances to state highways. Albany, N.Y. 32 pp.

b. No undue interference with the free and safe movement of highway traffic.
c. Maximum safety and convenience for pedestrians and other users of highway right-of-way.

SOLID WASTE DISPOSAL

Objective: Provide for the storage, collection, transportation and disposal of solid waste in a manner which will minimize air, water, and visual pollution and in a manner which will not create hazards to the health or welfare of people or wildlife.

General Guideline: Comply with all applicable state and local standards for the disposal of solid waste; utilize community solid waste disposal areas; locate disposal areas on deep, moderately permeable, well-drained soils and at sufficient distances from water bodies so as to prevent contamination thereof; and avoid locating disposal areas on steep slopes.

Description:

Solid waste means materials or substances discharged or rejected as being spent, useless, worthless, or in excess to the owner at the time of such discard or rejection, except sewage and other highly diluted water-carried materials or substances and those in gaseous form. Such wastes include garbage, sludge, rubbish, ashes, incinerator residue, street cleanings, dead animals, offal, abandoned vehicles, agricultural waste, commercial waste, demolition and construction debris, and industrial waste.

Solid waste disposal includes all techniques for the storage, collection, transportation, treatment, re-use and/or disposal of solid waste materials.

Common solid waste disposal practices include compaction, incineration, sorting and recycling of paper, glass and metal; abandonment at a managed (or unmanaged) dump or junk yard, and burial in a sanitary landfill.

Sanitary landfill means a land disposal site employing an engineered method of disposing of solid wastes on land in a manner that minimizes environmental hazards by spreading the solid wastes in thin layers, compacting the solid wastes to the smallest practical volume, and applying and compacting cover material at the end of each operating day.

Further Guidelines:

1. Sanitary landfill is the method currently recognized as both relatively desirable and feasible for solid waste disposal in Adirondack communities.

   Community solid waste disposal systems and recycling opportunities should be used if they have sufficient future capacity and meet the standards outlined below.

SITE STANDARDS FOR SANITARY LANDFILLS

2. Landfills should be located on deep, moderately permeable, well-drained soils.

3. Landfill sites should not be located on flood-plains.

4. Landfills should not be located on existing slopes exceeding 15 percent.

5. Seasonal high water table and bedrock should be at least five feet below the bottom of the sanitary landfill.

6. Landfills should be located at least 200 feet from lakes, ponds, rivers, streams (permanent and intermittent), wetlands or domestic water supply systems. Greater distances may be necessary depending upon soils, slope, depth to ground water or bedrock and the sensitivity of adjacent habitats.

7. Landfills should be located in areas not visible to the public or to surrounding property owners. Vegetative, topographic, and structural screening methods should be employed as appropriate.

8. Landfills should be located so that prevailing winds across the site blow away from habitations.

DRAINAGE

9. Surface water passing over or through a disposal site should be minimized by constructing proper drainage channels during operation and by proper grading and placement of a fairly impermeable cover material upon completion of use.

10. All new solid waste disposal sites must be approved and inspected by the Department of Environmental Conservation.

11. All new solid waste disposal sites should be planned and designed in accordance with the standards and guidelines contained in "Sanitary landfill: planning, design, operation and maintenance" (N.Y. State Department of Environmental Conservation, 1973) and "Sanitary Landfill Design and Operation" (Brunner and Keller, U.S. Environmental Protection Agency, 1972).

STORM DRAINAGE

Objective: Design, locate and construct storm drainage systems so as to maintain existing drainage patterns in a natural state and to minimize adverse hydrologic effects.

General Guideline: Provide adequate drainage for building sites and roads; avoid altering drainage patterns to the maximum extent possible; utilize natural drainageways to channel storm water runoff and preserve all natural surface water retention areas such as surface depressions, wetlands, bogs and marshes; and minimize runoff by such other methods as preserving vegetative cover and avoiding the creation of unnecessary or extensive impervious surfaces.

Description:

Storm runoff includes all that water from rainfall or snow melt which cannot be absorbed by the soil or stored on the surface at the point of interception, and therefore flows across the ground surface toward sites of lower elevation.

Storm drainage includes storm runoff, flowing along natural and man-altered drainage patterns.

Natural or existing drainage patterns consist of an interrelated network of depressions, swales, streams and other natural channels; the location of such features and their relationship to each other as they affect water-flow. These patterns are established by the existing hydraulic characteristics of the watershed (e.g., storm runoff rates; low flows; frequency discharge rates, amount, intensity and seasonal distribution of rainfall and topography).

A storm drainage system includes all structural works and ground alterations as well as natural drainage patterns which affect or regulate the flow of surface drainage including those used to intercept, collect and transmit water or to discharge water above or below ground (storm sewers, drainage swales, inlets, feeder pipes, outfalls, culverts, storage ponds, natural drainageways and others).

Further Guidelines:

MAINTAIN PRE-DEVELOPMENT DRAINAGE RATES & PATTERNS

1. Development should substantially maintain pre-development

drainage patterns. Post-development runoff rates and quantities on undeveloped portions of the project site should be substantially the same as those associated with pre-development conditions. Storm water should be considered as a part of the total water resources of both the site and surrounding area and be treated as such.

2. Development should be avoided or carefully planned with regard to drainage on soils having:

   a. a shallow depth to bedrock
   b. slow percolation rate
   c. hardpan, fragipan, ortstein, or other indurated (hardened) layer
   d. high water table
   e. steep slope

   Earth-moving or other activities should not block natural drainageways.

3. Storm drainage system design should take into account the drainage pattern of the larger watershed of which the project site is a part.

MINIMIZE EROSION AND PROTECT GROUND WATER RESOURCES

4. Systems should be designed to avoid soil erosion and sedimentation problems (e.g. sheet erosion and channel scouring) and protect groundwater resources. Erosion control or prevention should be accomplished at the source.

COORDINATION WITH LANDSCAPE AND DEVELOPMENT ACTIVITIES

5. Storm drainage systems should be designed in conjunction and to coordinate with street and road alignment, lot layout, building siting, existing topography, soils, vegetation, and natural or existing drainage patterns, and other related factors.

6. Where possible, lot lines should be in close proximity to and roughly parallel with existing drainageways.

7. To provide for present and future protection and maintenance of drainageways, it may be desirable to incorporate drainage easements into deed covenants.

8. Storm drainage systems should not interconnect with sanitary sewerage systems at any point.

ESTIMATION OF STORM WATER RUNOFF

9. Storm drainage systems should be designed to accommodate flows from a peak design runoff rate. Road ditches should be designed for structural stability and to safely handle the peak runoff rate from a 10-year frequency, 24-hour duration rainfall. All other runoff storage structures, subsurface infiltration devices, culverts, stream alterations or stabilization structures and stream crossings should be designed for stability and to safely handle the following peak runoff rates:

    a. When the drainage area is less than one square mile: a 10-year frequency, 24-hour duration rainfall.
    b. When the drainage area is at least one, but less than four square miles: a 25-year frequency, 24-hour duration rainfall.
    c. When the drainage area is four or more square miles: a 100-year frequency, 24-hour duration rainfall.

10. Estimation of storm water runoff, including peak and low flow discharge rates, runoff volume, and flow velocities should be calculated using a method commensurate with the magnitude and importance of the proposed project and changes which may result. In most instances, the Soil-Cover Complex Method as described in "Urban Hydrology for Small Watersheds" (Technical Release No. 55, U.S. Department of Agriculture, Soil Conservation Service 1975) should be used. The Rational Method or similar technique[1] is also satisfactory. All analyses should consider the effect of development on the watershed of which the project site is a part.

GRASSED WATERWAYS

11. Open, grassed ditches, overland flows, and natural swales should constitute the majority of the storm drainage system. They should harmonize with the natural features of the site and be designed to avoid safety hazards. The use of enclosed systems should be avoided or minimized.

12. Alignments should be coordinated with street and road alignment conforming to the natural topography. Natural swales should be favored, if practical.

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[1]Description of the Rational Method and how it should be applied are contained in "Design and Construction of Sanitary and Storm Sewers", op. cit. and in "Designing Storm Sewers Using the Rational Method", B.C. Yen, W.H. Tang and L.W. Mays, 1974. Water and Sewage Works.

13. Overland flow of runoff before it reaches open channels should be maximized. Sheet flows from smaller drainage areas should be directed over lawns or forest cover. Runoff should be directed over as flat slopes as possible, but retention of the natural landscape is more desirable than regrading to achieve flat slopes.

14. Open channel drainage systems should be desigend to (1) maximize natural infiltration of storm water to the ground water, (2) control velocity of runoff flows, and (3) minimize the concentration of runoff flows.

15. Channels should have adequate capacity for design flows and should provide for emergency flood water with minimum damage to the channel and surrounding areas.

16. The Manning Equation or similar technique should be used in calculating channel dimensions.[2]

17. Open grassed channels should be designed to be as wide and shallow as possible. Surfaces should be as rough and the gradient on as slight a grade as possible. However, topographic alterations to achieve these criteria should be minimized. In intensely developed areas, flat slopes should be avoided if permanent low marshy areas would result.

18. Channel cross sections should be parabolic or trapezoidal. Trapezoidal sections tend to revert to a parabolic shape. Consideration should be given to access across the channel and future maintenance. Channel side slopes should be 3:1 or flatter. They should be rounded at intersections of the road cross sections and blended with the natural terrain.

19. Maximum water velocities in open channels should be below that which will cause erosion of the channel. This will vary with the type of soil in the channel. Maximum design velocity should be 4.0 feet per second for vegetation established by seeding and 6.0 feet per second for sodded vegetation. Channels should be vegetated with species which will withstand scouring and periodic flooding. Seeding and mulching of channels should be accompanied by use of jute mats or similar protective materials placed over the seed bed.

20. If allowable velocities for a grassed channel would be exceeded, alternative methods for controlling erosion should be used.

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[2]For further information, see "Design Charts for Open Channel, Flow". Hydraulic Design Series No. 3. Bureau of Public Roads, 1961. Washington, D.C.

Such methods include:

a. Drop structures or other velocity control structures.
b. Lining with gravel or stones.
c. Rip rap.
d. Gabions (rock enclosed in wire mesh).
e. Portland cement concrete, asphaltic concrete or soil cement paving.
f. Retention basins.

21. Channels should be vegetated immediately after construction and before any diversion or other channels are outletted to them. Seeding, fertilizing, mulching and sodding should be done in accordance with Appendix B, or "Guidelines for Erosion and Sediment Control in Urban Areas of New York State".

22. Vegetated waterways should not be kept wet or subject to continuous flows of water. In sloping areas with strong seepage zones, tile drains can help alleviate this problem. Tiles should be laid parallel to the waterway on the uphill side of the waterway just beyond the top of the cut slope, and placed at a depth adequate to assure interception of the seepage zone.

23. During construction, trees, brush, and stumps should be disposed of so that the channel is free of any substantial irregularities which would inhibit normal flow.

24. Open channels should be properly maintained to ensure continued design performance. Debris and sediment should not be allowed to accummulate.

STORAGE OF RUNOFF

25. Permanent and/or temporary runoff storage facilities should be considered a basic component of storm drainage systems. They are especially important during the construction phase of a project. Areas with suitable soils, topography and vegetation and open space areas should be considered as opportunities for the location of these facilities. Storage areas should be designed to retain water during high runoff periods and to release it gradually. Where practical they can serve as sediment traps. Avoid direct discharges from parking lots, streets and roofs to water bodies. Where feasible, flows from small parking lots and roofs should be sheeted across lawns or existing natural vegetation.

26. Storm drainage systems should be designed to recharge water to the ground, especially where it is important to compensate for ground water withdrawals.

27. Runoff from parking areas can be minimized by using grassed areas for overflow parking which can serve as storage-recharge areas. Grassed depressions within paved parking areas can be designed for the same purpose. Runoff can also be stored in parking lots and released through limited diameter outlets to slow the rate of runoff. These storage areas can be created by designing a depression in the lot blocked on the outside by a shallow earth embankment. Ponding areas should be located at the furthest reaches of the lot so as not to interfere with pedestrians reaching their vehicles. Water depths anywhere in the ponding area should not exceed seven inches and provision for an overflow outlet should be made to see this depth is not exceeded.

28. Runoff can also be discharged to percolation storage areas (e.g. recharge pits). Where deep permeable subsoils exist, runoff can be directed to trenches or beds backfilled with coarse sands and gravel placed so that coarser materials on the top grade into finer ones on the bottom. Movement of sediment into the percolation area must be minimized. Design of these facilities should be based on a percolation test. Excess storm waters should be carried away by means of an overflow channel.

STREETS AND CURBS

29. The depth and velocity of flow along and across streets and roads should reflect the type of roadway proposed, its proposed use, and traffic load. Design criteria should be based on the references found at the end of this section.

30. Large amounts of runoff should not pond or flow across intersections during normal rainfall conditions.

31. Low areas should have sufficient channel capacity to relieve and prevent flooding of intersections and adjacent buildings.

32. Along roads with deep cuts, terracing or creation of benches with intercepting channels at the base of each bench is suggested. These should be designed to reduce the amount and velocity of water over the side slopes.

33. Systems should be designed so that silt or debris, carried in suspension, is not deposited on the travelled way when velocity is reduced.

34. Inlets with combination curb and gutter openings are generally preferred. Design of curbs and inlets should consider pedestrian and bicycle safety.

35. Storm water inlets on sloping streets should be designed so that the velocity of water flow does not carry more than 5-10% of the water past the inlet.

36. Grating of inlets should self-clean leaves and debris.

UNDERGROUND PIPE SYSTEMS, INLETS AND OUTLETS

37. Enclosed systems should be avoided where possible, but may be an important part of a runoff management system.

38. Design of enclosed systems should be based on appropriate hydraulic considerations and usually involves complex engineering criteria. Enclosed systems are generally not a part of residential developments in the Adirondack Park and will not be considered here. The references following these further guidelines should be consulted. Proper size of conduits should be determined by hydrologic and hydraulic computation for each site.

39. Design, location, and number of inlets should be based on gutter gradients and cross sections, peak flows and time of concentration, and potential for erosion and blockage from debris. Inlet boxes should be self-cleaning, even during periods of low flow. Sediment traps should not be designed into the inlet. Properly designed side opening inlets are preferred over grated inlets.

40. Outfall design should incorporate energy dissipators or other protection, especially near water bodies, when discharge velocities are high or where discharge is to erodible soils.

CULVERTS

41. Where culverts are planned to convey water under a road, they should be extended for the full cross-section of the road, including shoulders and normal embankments.

42. Where practical, culverts should have flared end sections.

43. Culverts may require energy dissipators at their outlet, where the receiving ground or channel is relatively erodible. Dissipators can vary from rip-rap to concrete stilling basins.

NOTE: These further guidelines have been based primarily on the following publications. They should be cited for further information or for guidance in situations where no guideline has been provided.

American Association of State Highway Officials. 1966. A Policy on Geometric Design of Rural Highways; 1965. Washington, D.C. 650 pp.

Joint Committee of the Water Pollution Control Federation and the American Society of Civil Engineers. 1969. Design and construction of sanitary and storm sewers. WPCF Manual of Practice No. 9. Water Pollution Control Federation, Washington, D.C. 332 pp.

The Urban Land Institute, The American Society of Civil Engineers, and The National Association of Home Builders. 1975. Residential storm water management; objectives, principles and design considerations, Washington D.C. and New York, New York. 64 pp.

U.S. Department of Agriculture, Soil Conservation Service. 1972. Guidelines for erosion and sediment control in urban areas of New York State. Syracuse, N.Y.

U.S. Department of Agriculture. Soil Conservation Service. 1975. Urban hydrology for small watersheds. Technical Release No. 55.

STREETS & ROADS

Objective: Design and construct roads and streets to provide safe and convenient access without causing undue adverse impacts on natural and public resources.

General Guideline: Conform street and road alignments with existing topography and vegetation: avoid steep slopes, abrupt curves and excessive cuts and fills; provide adequate road surfacing and road bed drainage; preserve existing drainage patterns; and design streets and roads so as to minimize the impacts of construction and maintenance practices.

Description:

Roads is an inclusive term which refers to major and minor state, county, town and private roadways designed for use by motorized land vehicles. Streets commonly refer only to local residential or commercial corridors adjoining or connecting major roads.

Further Guidelines:

Roads and Streets should be planned, designed, constructed and maintained according to the Development Standards for Streets and Roads in the Adirondack Park" (next page).

DEVELOPMENT STANDARDS FOR STREETS AND ROADS IN THE ADIRONDACK PARK

ADIRONDACK PARK AGENCY
April, 1977

GENERAL

1. All roads should be planned and installed to relate logically to the existing soils, topography, and vegetation. For these purposes, areas with steep slopes, shallow soils, wetlands, soils with a water table at or near the surface, and soils that are highly susceptible to erosion or slippage should generally be avoided.

2. The construction of roads and the installation of utilities should be well coordinated within a sequential plan, so that construction operations do not conflict and so that subsequent construction operations do not interfere with or destroy completed work. For this purpose, installation of community sewer and water lines, if proposed, should be done prior to the installation of underground electric, telephone, natural gas or cable television distribution lines. When electric, telephone, natural gas or cable television distribution lines are to be located underground, sewer and water stubs for individual or group service should extend at least two (2) feet beyond underground utility easements into private property.

3. As a guide to designing for clearing and grading when underground utilities are proposed, see: "Memorandum of Understanding Between the Adirondack Park Agency and Niagara Mohawk Power Corporation regarding Installation of Underground Distribution Lines in Adirondack Park Subdivisions".

4. Construction operations that materially disturb the soil for an aggregate area larger than twenty thousand (20,000) square feet, excluding areas proposed for road surfaces, should be done in stages. Each stage should consist of no more than twenty thousand (20,000) square feet of surface area excluding areas proposed for road surfaces. Each stage should receive complete treatment for revegetation or mulching as described in Appendix B prior to commencing work on succeeding stages.

5. Construction equipment and gas, oil and other potentially toxic materials should be parked or stored well away from shorelines and generally located to minimize the possibility of leaks or spills into surface water.

ROAD LAYOUT CRITERIA

6. Road layout should minimize stream crossings and avoid traversing existing slopes exceeding 25%.

7. Side road intersections should be at right angles to main roads and be separated by at least 200 feet, but in no case by less than the stopping sight distance corresponding to the legal speed limit.

8. Dead-end roads should have pulloffs and turn-arounds at intervals of not more than one-quarter mile in strongly rolling to mountainous terrain and not more than one-half mile in flat to gently rolling terrain. Dead-end roads should not generally exceed four hundred feet and should terminate in a circular turn-around having a minimum right-of-way radius of 60 feet and pavement radius of 50 feet. At the end of temporary dead-end roads, a temporary turn-around with a pavement radius of 50 feet should be provided. Consider reserving a 20-foot wide easement to provide for continuation of pedestrian traffic and utilities to the next street. Looped streets should not exceed 700 feet in length.

9. Where appropriate and economically feasible, include bikeways and pedestrian walkways in the design of new streets. Where practicable, they should be located on separate rights-of-way, away from the road shoulder and motor traffic. They should be paved and lateral surface drainage should be provided.

10. Subdivisions containing 20 lots or more should have at least two street connections with existing public streets or roads.

11. Horizontal and vertical alignment of roads, that is, curve radii and changes in grade respectively, should be based upon design speeds of not less than 25 m.p.h. and the corresponding minimum stopping sight distance, except that for roads having less than 25 lots per mile or serving less than 25 lots (in each case including lots on both sides of the road) that stated velocity may be reduced to 15 m.p.h. Avoid "broken back" curves (two curves in the same direction separated by a short straight section) and reverse curves (two curves in opposite direction) separated by a short straight section.

12. When a subdivision abuts or contains an existing or proposed major street or road, consider use of marginal access streets, parallel to the major roads to avoid a number of individual entrances to the major road.

13. Minor streets should be laid out so that their use by through traffic will be discouraged.

14. All roads for new subdivisions that have more than twenty-five (25) lots per mile of road or serving 25 lots or more (i.e., counting houses on both sides of the road) should have as a minimum a 50-foot right-of-way (R.O.W.),

a 12-inch thick compacted gravel base, a driving width of 18 feet, crowned, and 4-foot wide shoulders. Roads for new subdivisions that have less than twenty-five (25) lots per mile of road or serving less than 25 lots but more than 5 should have as a minimum of 50-foot right-of-way (R.O.W.), a 12-inch thick compacted gravel base, a driving width of 15 feet, crowned, and 2-foot wide shoulders. Roads serving less than 5 lots need have only a compact base and a driving width of 14 feet.

15. In areas for which a commercial use is planned, assure the free flow of through traffic without interference by parked or parking vehicles, and provide adequate and safe parking space for such commercial or business area, such as through the use of pull-offs or controlled parking zones.

16. All street right-of-way lines at intersections should be rounded by curves of at least 20 feet radius and curbs should be designed accordingly.

ROAD GRADE AND SURFACING

17. Road and private drive grades should not exceed a 12% average grade over any 150 foot length, and should not exceed 15% over any lengths. Grades should not exceed more than 3% within 50 feet of any intersection.

18. For roads serving subdivisions that have more than twenty-five (25) lots per mile of road or serving 25 or more lots, those sections of roads with grades exceeding 10% over any length should be treated with oil or bituminous compounds to provide a durable all-weather driving surface.

CLEARING AND GRADING

19. Clearing and grading for road and utility installation should be limited to that which is necessary to construct safe roads, provide needed roadside and embankment drainage, construct stable cuts and fills and provide for utility installation. The typical clearing and grading cross sections (attached) should be used as a design guide. Employ an appropriate typical clearing and grading cross-section, and where utilities are to be undergrounded, those utilities should be placed in accordance with such cross section.

20. Leave a forested edge that is uneven and at varying distance from the street or road. Vegetation and other landscape activities should be preserved and protected. When possible and if safety allows, leave specimen trees and other interesting vegetation located near the road.

21. Trees which must be removed should be felled toward the roadway clearing to avoid damage to trees which will remain. Stumps which will not be removed should be cut as close to the ground as possible.

ROAD DITCHING SPECIFICATIONS

22. Finished grades of all road ditches (where required) should be a minimum of one and one-half (1-1/2) feet below the center of the road surface. Road ditches should be designed to have a minimum hydraulic capacity equal to the peak runoff rate from a 5-year, 24-hour rainfall. Drainage culverts should be located so as to maintain pre-construction surface drainage patterns, provided such patterns were acceptable prior to construction.

BRIDGE AND CULVERT CAPACITIES

23. Stream crossings should be at right angles and bridges or culverts should be designed to carry the peak runoff rate from:

    a. A 10-year, 24-hour rainfall if the contributing drainage area is one square mile or less
    b. A 25-year, 24-hour rainfall if the drainage area is between one and four square miles, or
    c. A 100-year, 24-hour rainfall if the drainage area is more than four square miles.

CUT AND FILL SPECIFICATIONS

24. Fill slopes should not be steeper than 2 horizontal on 1 vertical (2:1). Cut slopes should not be steeper than 2:1 on coarse sand and gravel soils, 2-1/2:1 in fine sand and silty sand; 3:1 in sandy silt, or 4:1 in silt, sandy clay, or clay. If positive internal drainage and/or lateral structural support is provided for wet soil conditions or fine grained soils, the slopes may be steeper in accordance with design analysis and with consideration of the aesthetic impact.

25. All areas to be filled for road construction should be cleared and grubbed prior to placement of fill. Clearing and grubbing should consist of removal of all woody vegetation consisting of trees, logs, and brush. All fills should be compacted to provide stability of material and to prevent undesirable settlement. The fill should be spread in a series of layers, each not exceeding twelve (12) inches in thickness and should be compacted to achieve a uniform density of at least ninety (90) percent of Standard Proctor Maximum Density.[1]

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[1] Refer to ASTM D-698.

DRIVEWAY ENTRANCES

26. Driveway entrances should be located at least 50 feet from any street intersection.

27. Driveways should not be located along acceleration or deceleration lanes or lane tapers.

28. Construction of a driveway should not cause water to flow across roadway or to pond on the shoulders or in the ditch. To avoid ponding or sheeting of water on road surfaces, driveways should be constructed to slope away from the edge of the roadway surface at the same slope as the road shoulder, which normally varies from one-half to one inch per foot. This slope should be continued the full width of the shoulder or longer so as not to cause a bump or a depression in the shoulder area. If possible, the low point of the driveway should be at or close to the ditch line of the highway ditch.

29. Where the construction of a driveway necessitates crossing a highway ditch, a culvert pipe should be installed in the ditch and the low point of the driveway profile should be at or close to the ditch line. Culvert pipe should be a size adequate to carry the anticipated flow in the ditch, and should not be smaller than 12 inches inside diameter.

30. Construction of new driveway entrances to state highways requires a permit from the Department of Transportation. For pertinent standards, see "Policy and Standards For Entrances to State Highways" by the N.Y. State Department of Transportation (Undated, Albany, NY, 32 pp.). Additional guidelines for the design and construction of driveways are contained in Topic 25: "Siting and Construction of Buildings".

REVEGETATION AND STABILIZATION OF DISTURBED AREAS

31. All cleared areas, exposed borrow areas, and cut and fill slopes including ditch banks, should be successfully vegetated generally to grasses or legumes that are suited to site conditions.[2] Ditch bottoms should be constructed and maintained to minimize soil erosion during periods of design flow by means of revegetation, sodding, mulching, netting, stone paving, riprap and other materials or combinations of these, depending on site hydraulics and soil properties.

32. Upon completion of final grading of any area, revegetation operations should begin within five (5) days (weather conditions permitting) and should be completed within ten

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[2] See Appendix B; "Conservation Plantings on Critical Erosion Areas".

(10) days. In the event that more than five (5) days should elapse between any consecutive construction operations that materially disturb the soil, such areas should be adequately mulched or otherwise stabilized with structural measures within five (5) working days of disturbance and should be completed within ten (10) working days to minimize the potential for soil erosion. Mulching should be done in accordance with appropriate provisions prescribed in Appendix B.

33. Revegetation measures and efforts should be evaluated by visual inspection which should include identification and measurement of the actual condition of new healthy vegetation. Said evaluation should not be made sooner than fifteen (15) calendar days from the date of planting unless it appears obvious that revegetation efforts have failed and should be reinstituted. Corrective action should be instituted immediately upon determination of unsatisfactory revegetation, and in no event should such action be delayed to the point where satisfactory growth and development of seed or plantings could not take place prior to the end of the current growing season.

SNOW REMOVAL AND ROAD SALT

34. Design should allow for adequate snow belts along streets and piling areas at turn-arounds. These areas should be large enough at intersections so that drivers' vision will not be obscured by large mounds of snow.

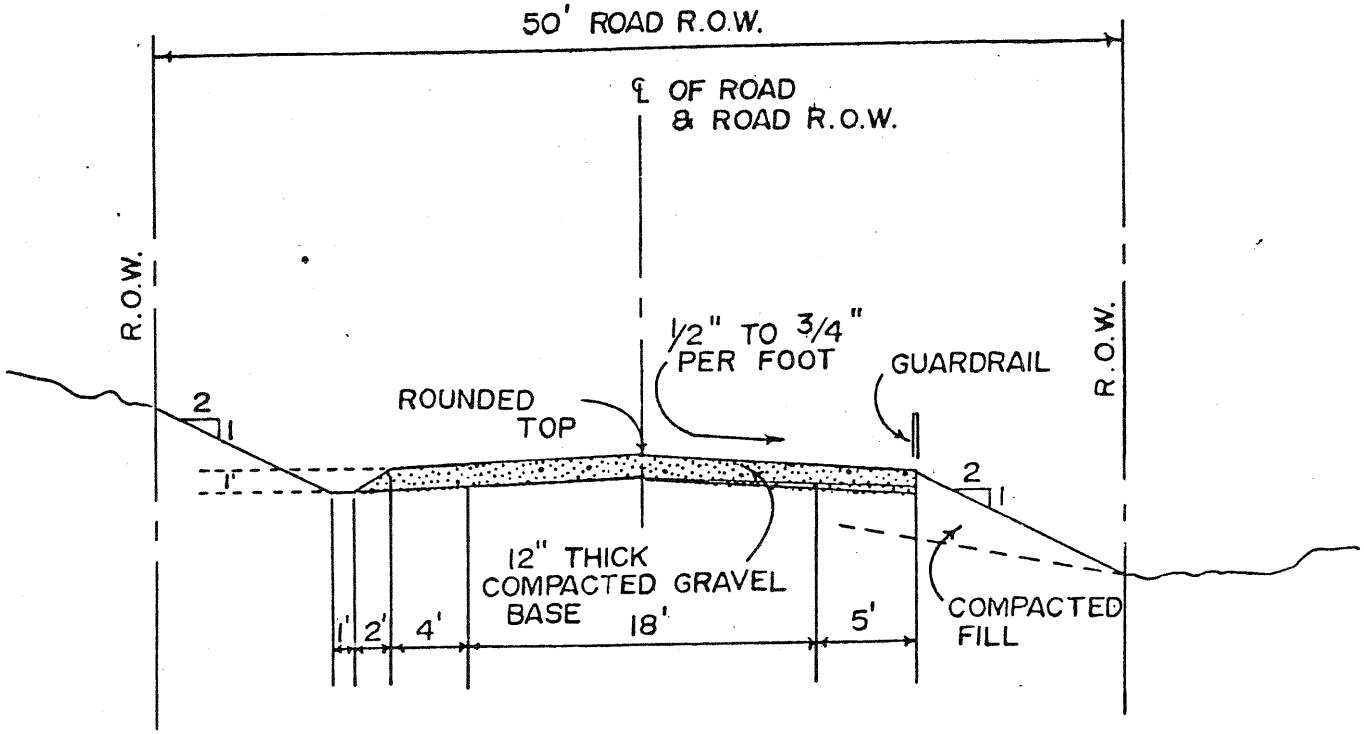
35. Road maintenance procedures should minimize the use of salt and other deicing compounds for keeping surfaces free of ice and snow. Lightly salted sand is a desired alternative. Under no circumstances should any deicing compound be used to keep culverts free of ice and snow.

For further guidance on design and maintenance of streets and roads see:

Vehicular Circulation by R.N. Zolomy, Undated. American Society of Landscape Architects Foundation. McLean, Virginia, 83 pp.

The Vermont Backroad by Robert F. Longfield, Jr., 1974, Northeast Environmental Design, Woodstock, Vermont. 69pp.

Site Planning by Kevin Lynch. 1962. The M.I.T. Press. Cambridge, Mass. 248 pp.



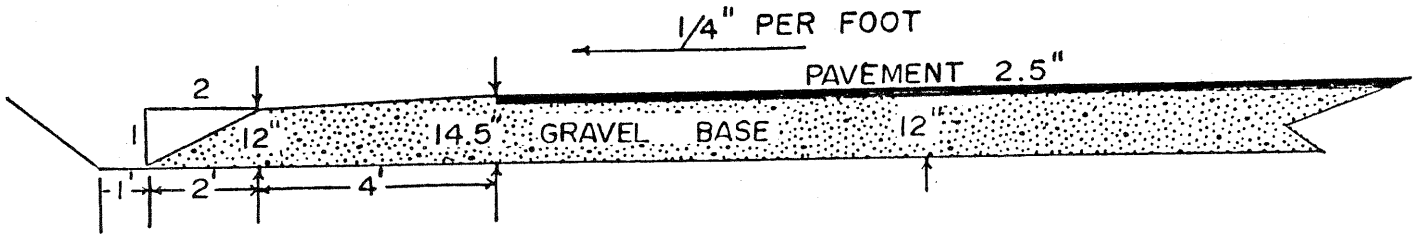
ALL SIDE SLOPES ARE 2H ON IV
DITCHES 1' DEEP WITH 1' BOTTOM WIDTH

CLEARING LIMIT AND GRADING SCHEMATIC

TYPICAL ROAD CROSS SECTION
AND
GRADING SCHEMATIC
FOR
GRAVEL RO_

SCALE: =10'

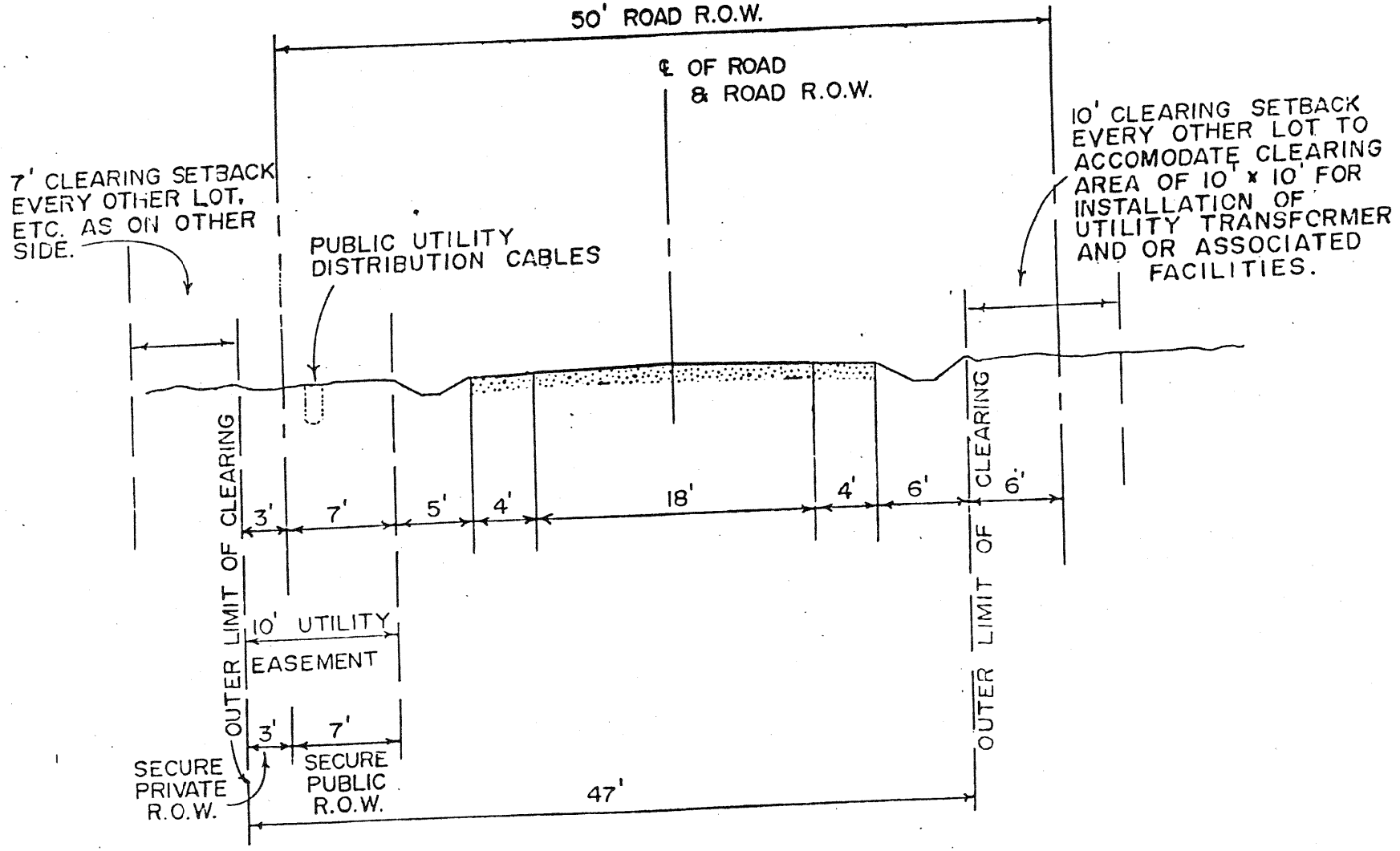
1-7-75 DWH



SAME AS SHEET 1 OF 12

TYPICAL ROAD CROSS SECTION
AND
GRADING SCHEMATIC
FOR
PAVED ROAD
SHEET 2 OF 12

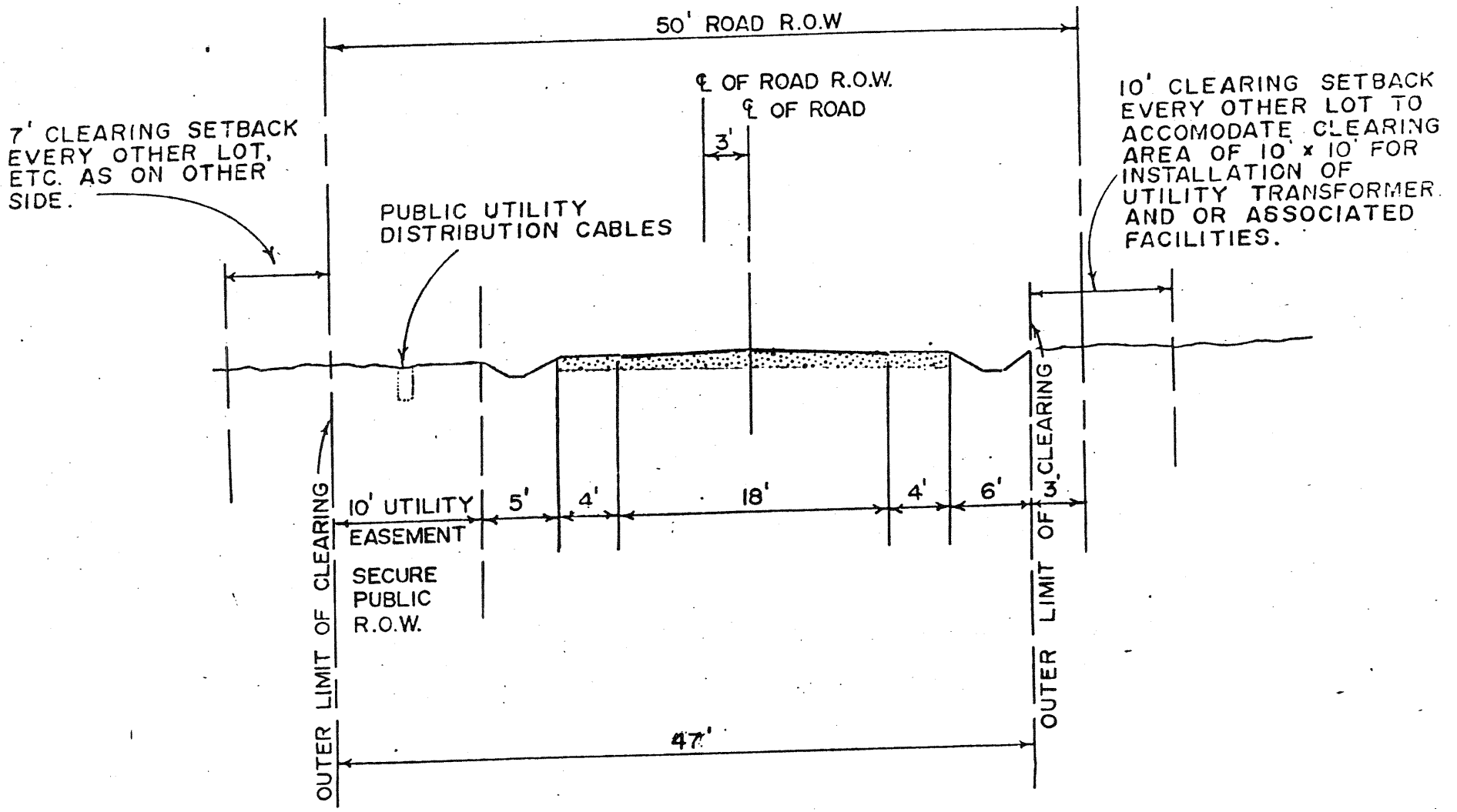
1-7-75 DWH



TYPICAL ROAD CROSS SECTION
FOR
LEVEL GROUND

SCALE: 1" = 10'

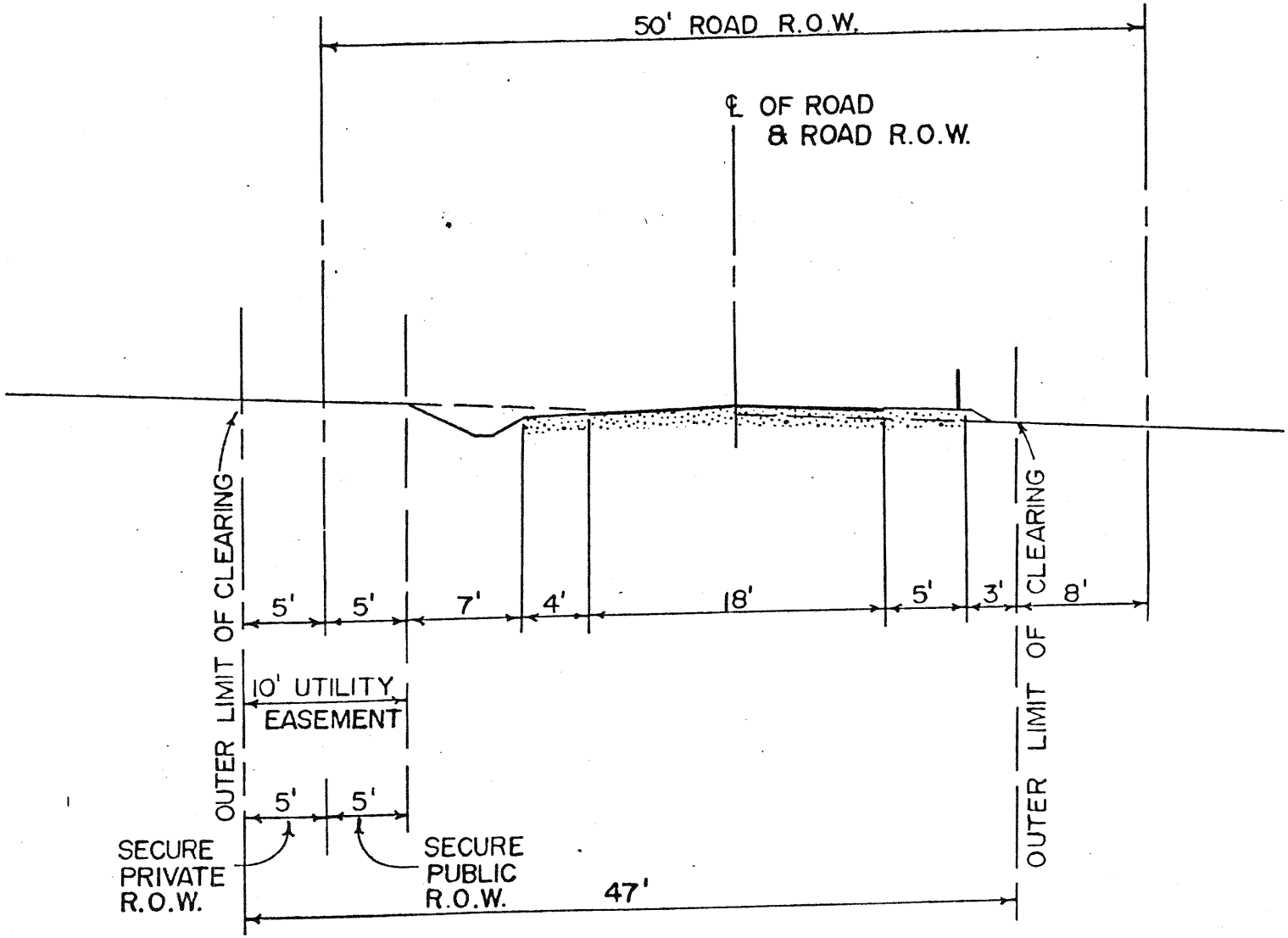
1-7-75 DWH



TYPICAL ROAD CROSS SECTION
FOR
LEVEL GROUND

SCALE: 1"= 10'

1-7-75 DWH

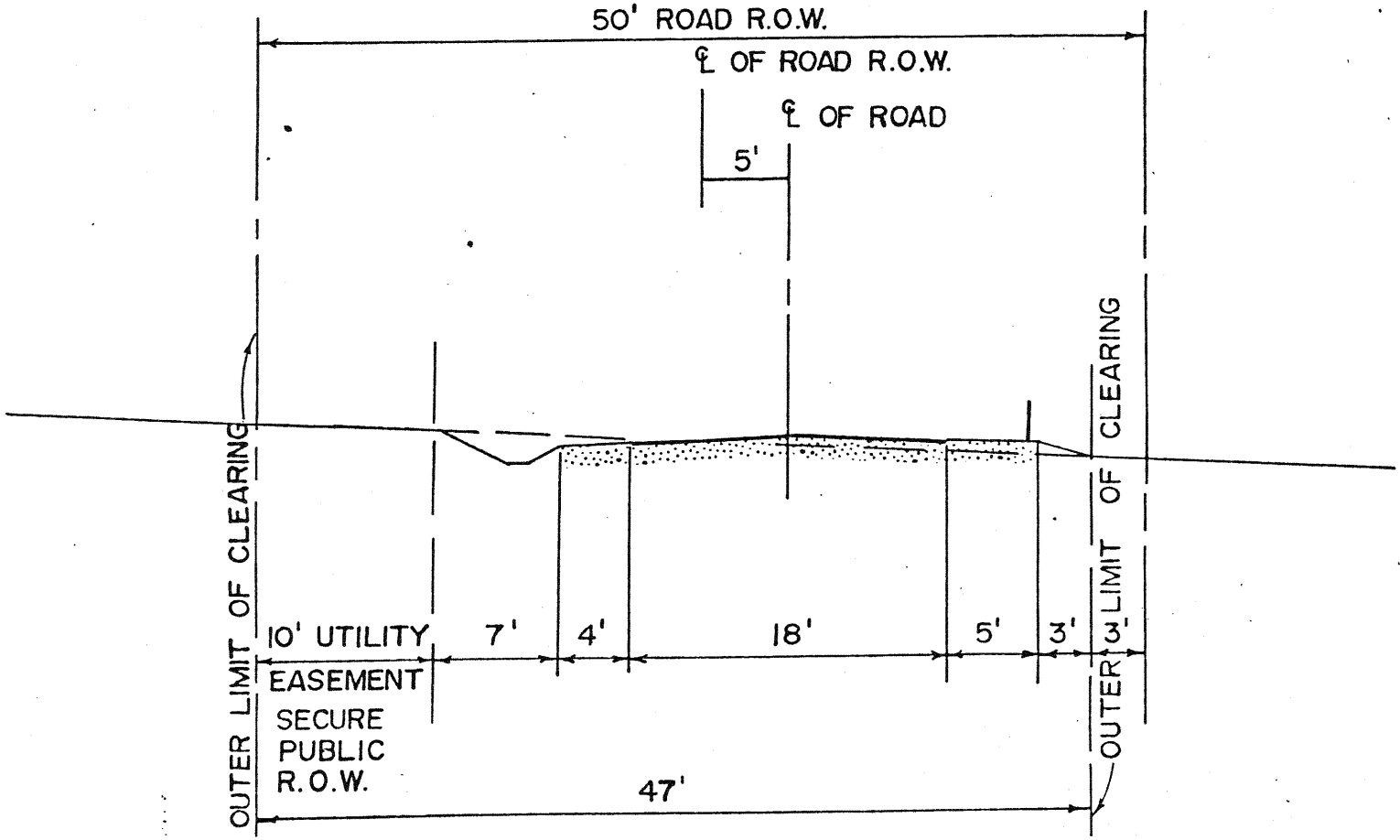


TYPICAL ROAD CROSS SECTION
FOR
GENTLY SLOPING GROUND

SCALE: 1"= 10'

1-7-75 DWH

SHEET 5 OF 12

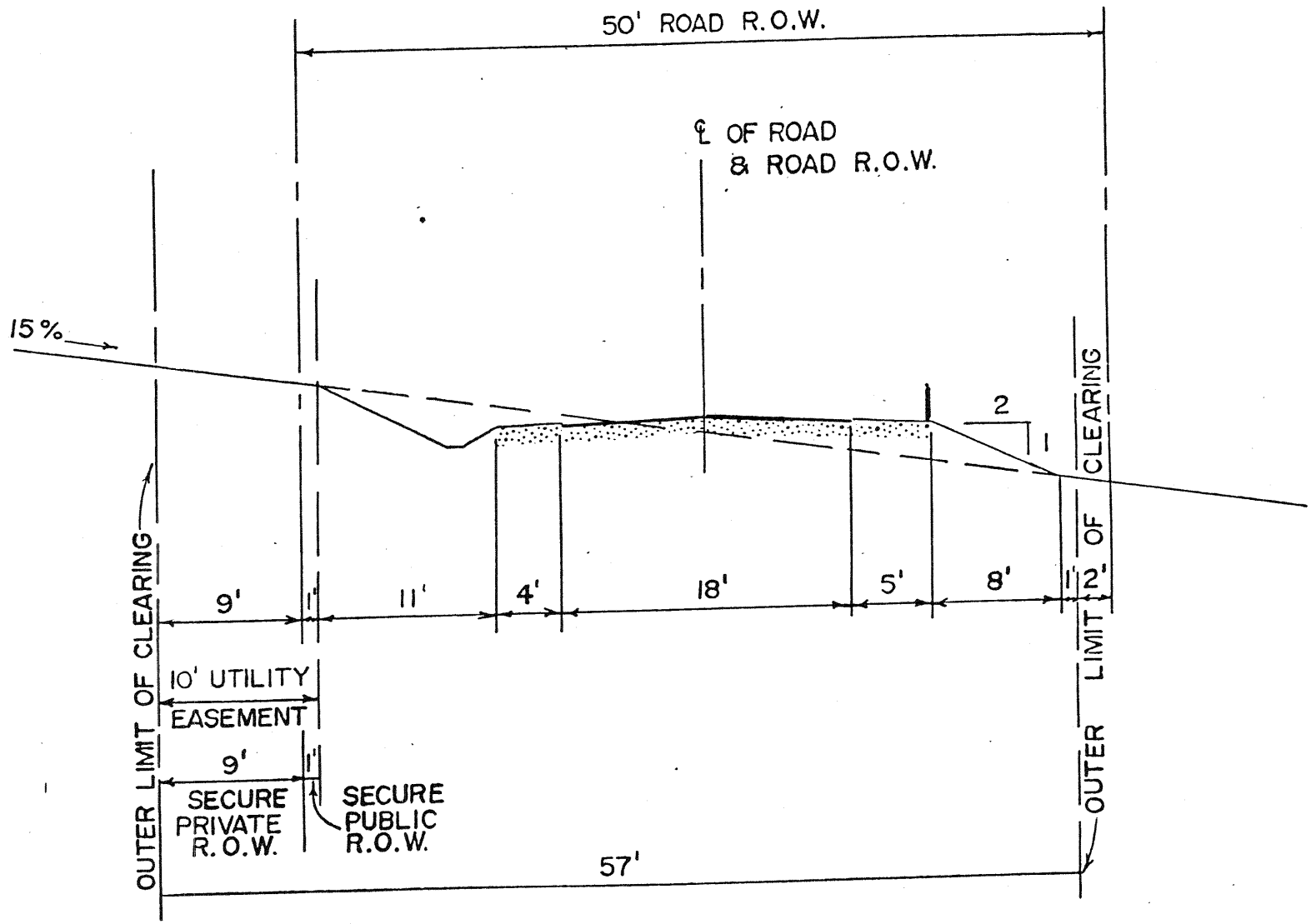


TYPICAL ROAD CROSS SECTION
FOR
GENTLY SLOPING GROUND

SCALE: 1"=10'

1-7-75 DWH

SHEET 6 OF 12

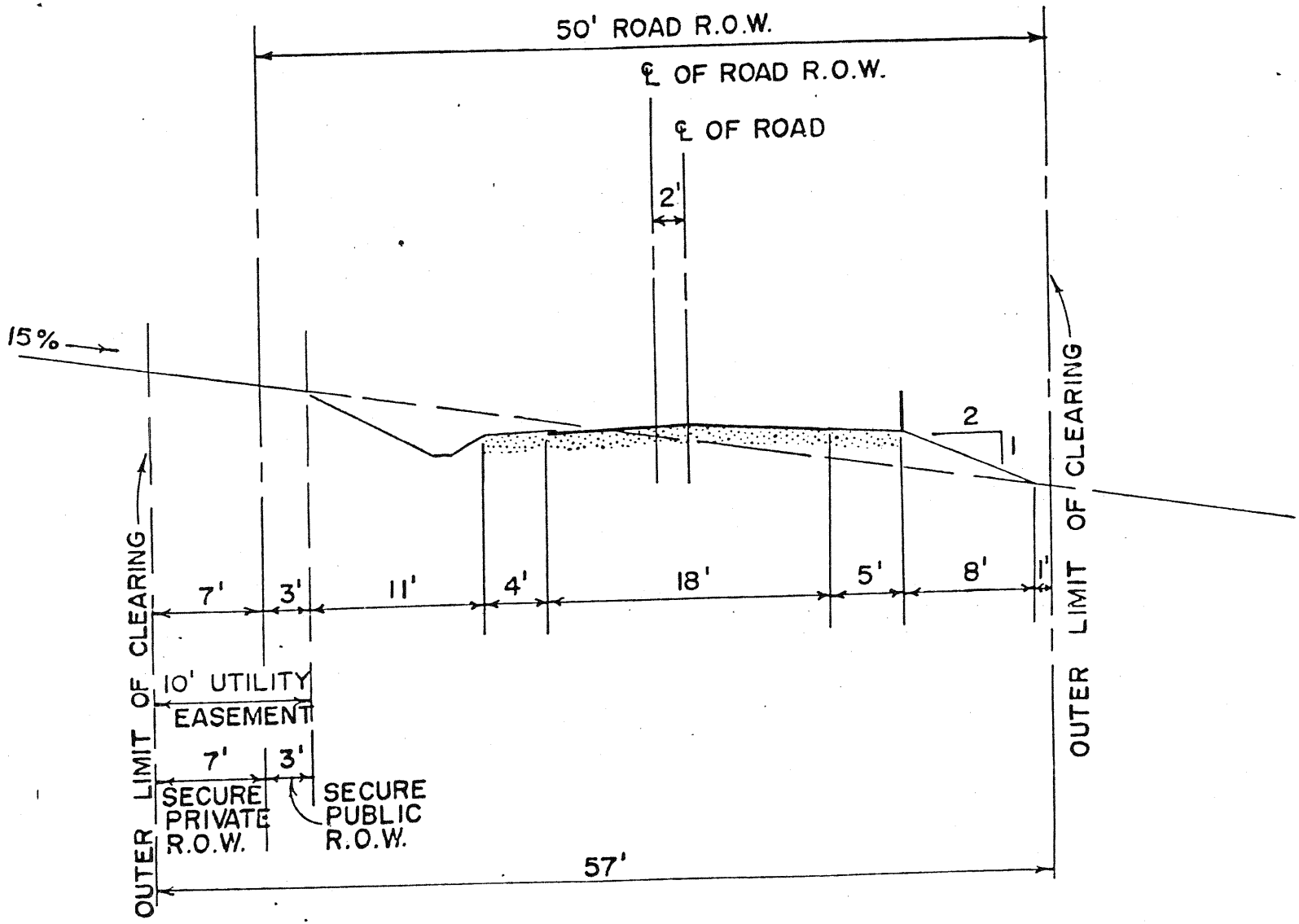


TYPICAL ROAD CROSS SECTION
FOR
15% SLOPING GROUND

SCALE: 1" = 10'

SHEET 7 OF 12

1-7-75 DWH

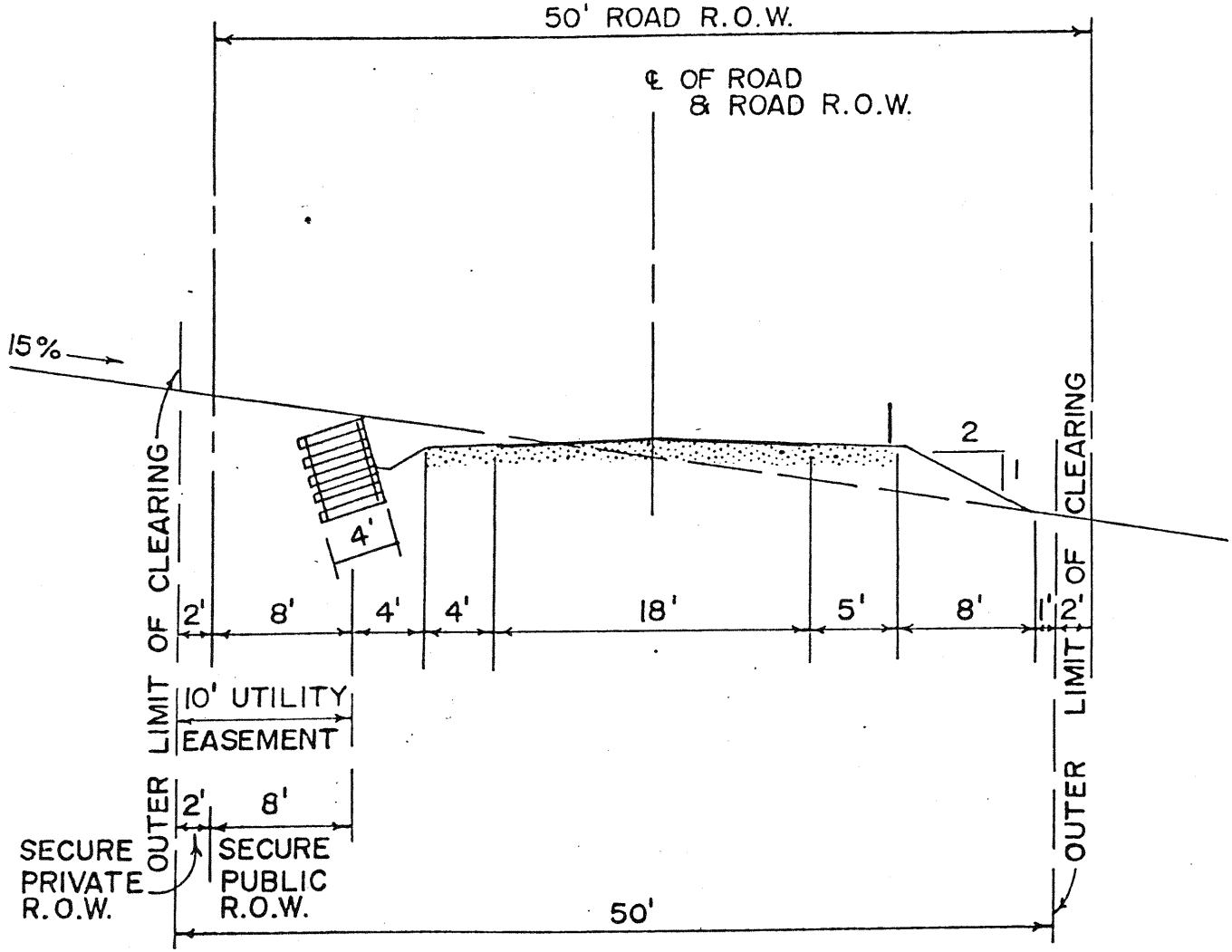


TYPICAL ROAD CROSS SECTION
FOR
15% SLOPING GROUND

SCALE: 1"=10'

1-8-75 DWH

SHEET 8 OF 12

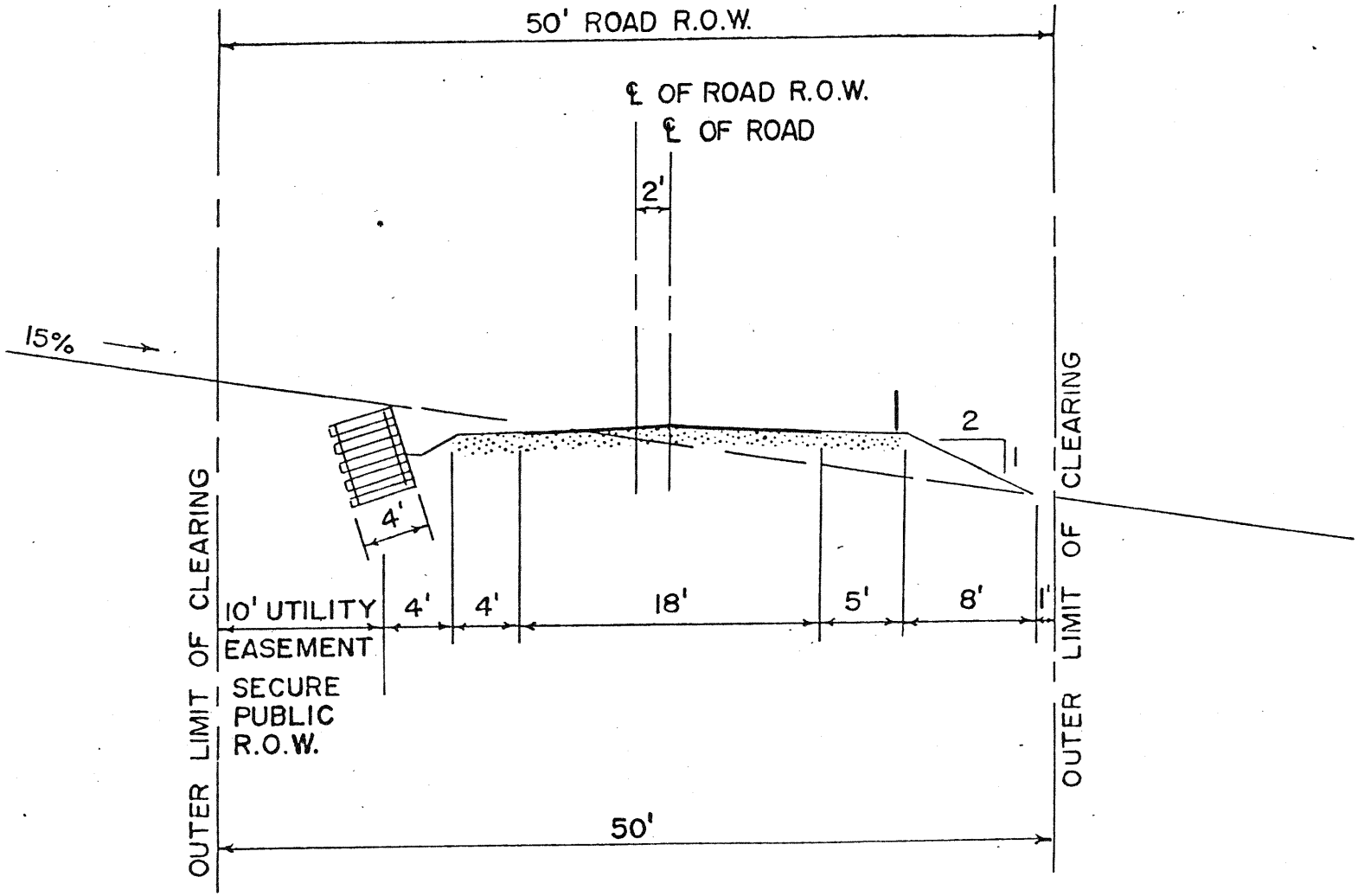


TYPICAL ROAD CROSS SECTION
FOR
15% SLOPING GROUND
USING A RETAINING WALL

SCALE: 1"=10'

1-8-75 DWH

SHEET 9 OF 12

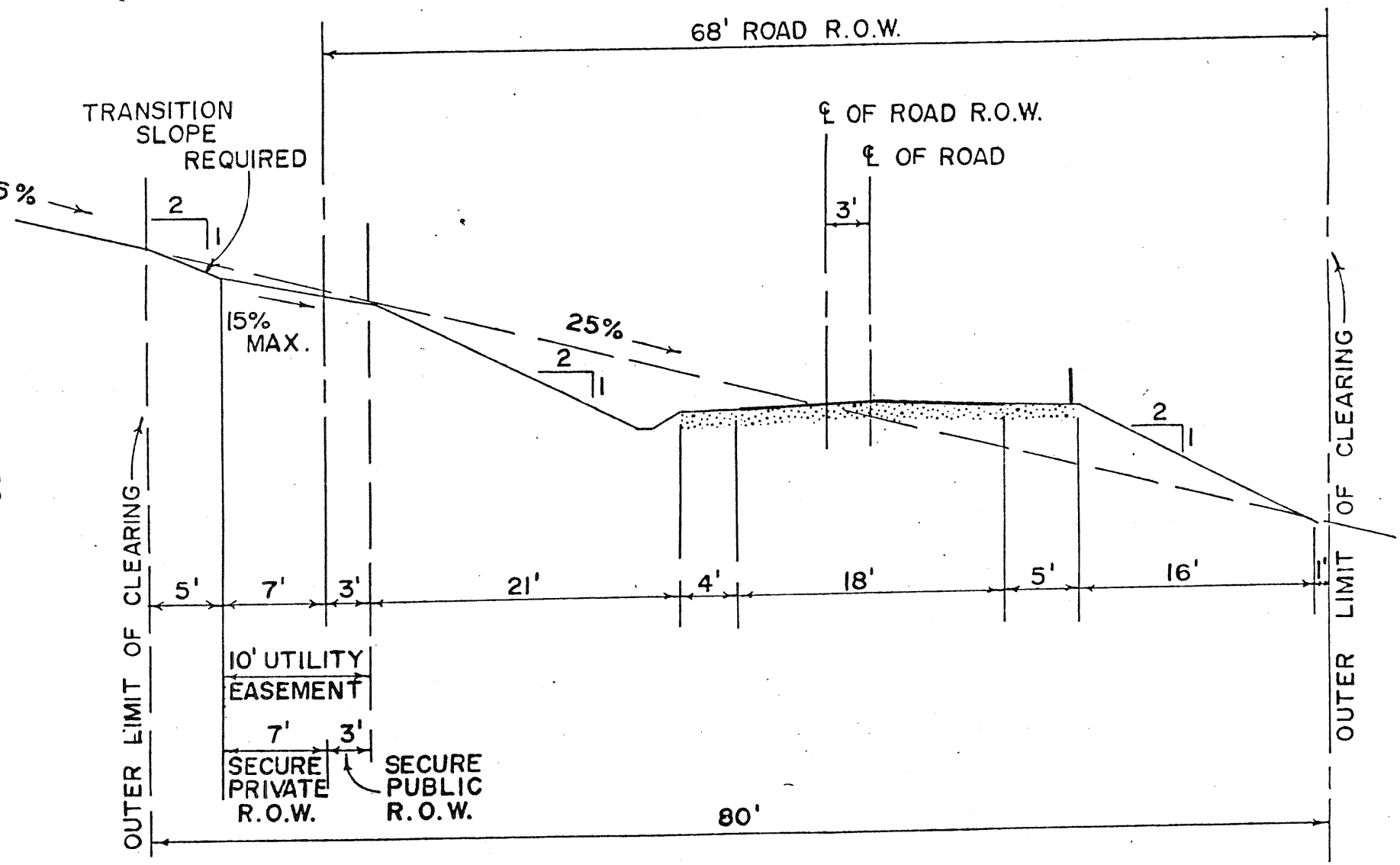


TYPICAL ROAD CROSS SECTION
FOR
15% SLOPING GROUND
USING A RETAINING WALL

SCALE: 1"=10'

1-8-75 DWH

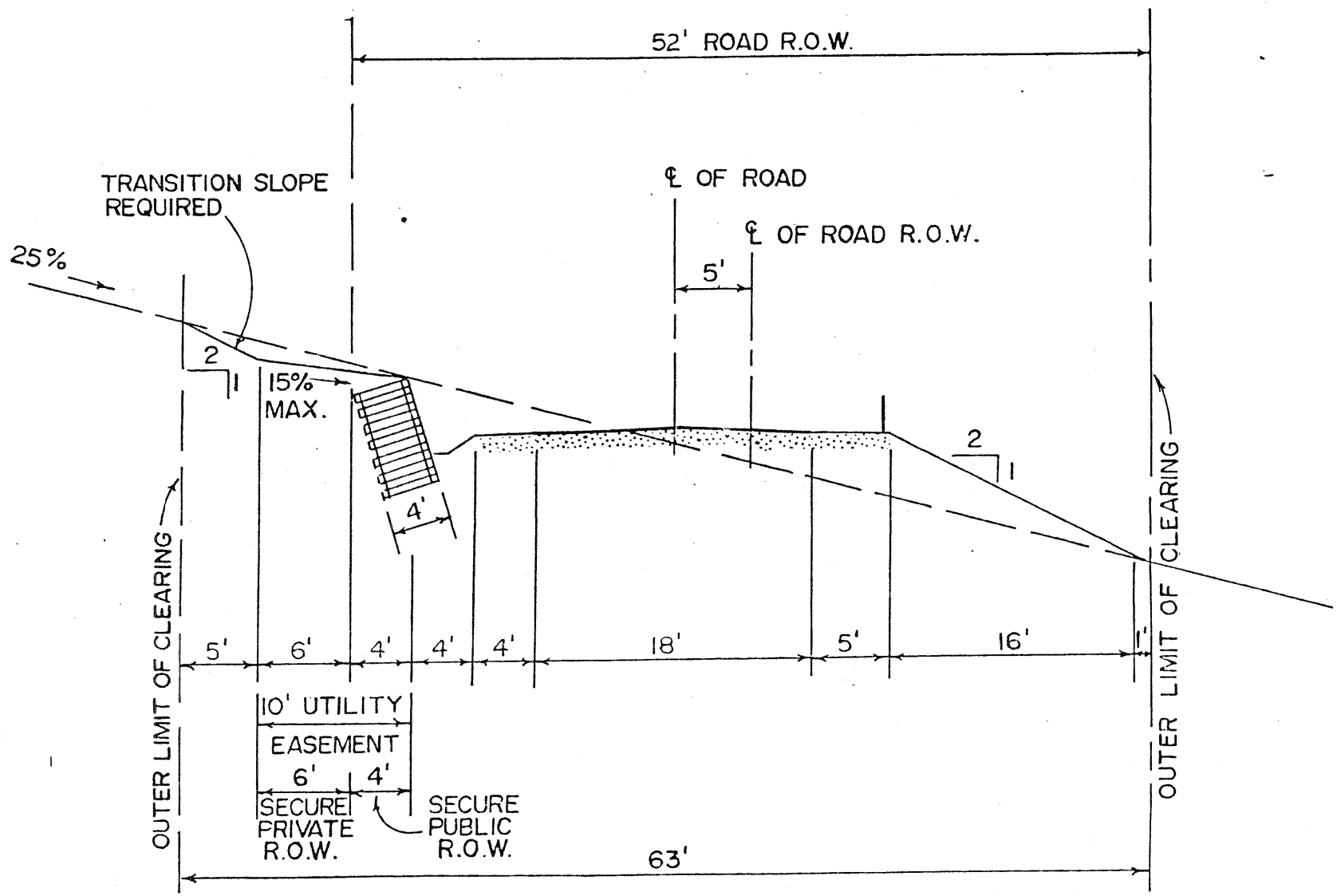
SHEET 10 OF 12



TYPICAL ROAD CROSS SECTION
FOR
25% SLOPING GROUND

SCALE: 1" = 10'

1-8-75 DWH



TYPICAL ROAD CROSS SECTION
FOR
25% SLOPING GROUND
USING A RETAINING WALL

SCALE: 1" = 10'

1-7-75 DWH

SHEET 12 OF 12

UTILITIES

Objective: Locate, design, construct and maintain utilities so as to efficiently accomplish project objectives, preserve natural and public resources, and assure visual compatibility to the maximum possible degree.

General Guideline: Locate utilities underground if feasible and in such a way that alignments are compatible with existing topography and vegetation; minimize visual impacts on surrounding areas by maintaining and preserving as much vegetative cover as possible and utilizing existing topography; and minimize maintenance practices such as herbicide spraying which could have adverse environmental impacts on terrestrial and aquatic ecosystems.

Description:

Utilities means publicly or privately owned systems providing electricity, natural gas, cable T.V., or telephone service. The systems may include distribution lines and supporting structures, substations, transformers, junction boxes, and other components. For purposes of this document, utilities does not include water supply and sewage disposal systems; nor does it apply to major public utility uses (e.g. electric power transmission lines), as defined in the APA Act.

Further Guidelines:

DESIGN CRITERIA

1. Coordinate clearing and grading for utility installation in wooded areas with plans for the installation of roads, water, sewer, and gas lines.

2. When possible, utilities should be located on one side only of the road right-of-way (R.O.W.).

3. Minimize the total roadway clearing width by emplacement of the utilities wholly or partially within the road R.O.W.

4. Clearing, grubbing and grading for utility installation should be confined within a 10 foot utility easement width. Pruning of over-hanging branches, rather than cutting of trees, should be done to allow free operation of the machinery that is to be used in installation and maintenance operations.

5. Installation of community sewer and water lines, if proposed, should be done prior to the installation of underground utility distribution lines to avoid interference with or destruction of completed work.

6. Whenever feasible, utility distribution lines should be located underground. In general, utilities should be underground when serving new multiple-occupancy buildings or in subdivisions of five (5) lots or more if the subdivision will require no more than 200 trench feet of distribution line per planned dwelling unit. Regulations of the Public Services Commission (NYCRR, Port 100, "Underground Extensions for New Residential Subdivisions") should be met. In addition, underground electrical distribuion lines should be installed in accordance with the criteria contained in the "Memorandum of Understanding between the Adirondack Park Agency and Niagara Mohawk Power Corporation regarding installation of Underground Distribution Lines in Adirondack Park Subdivisions" (see page 29-4).

7. Sewer and water hook-up stubs for individual or group service should extend at least two (2) feet beyond underground utility easements into private property.

8. Transformer pads or mounts for distribution of electric, telephone, natural gas, or cable television to individual service lines should be located beyond the utility clearing limits and within private property. Such pads or mounts should be located as close as practicable to the property line dividing adjoining lots.

9. Revegetation, protection and maintenance of disturbed soil areas associated with the installation of utilities should be done in accordance with appropriate guidelines contained in Appendix B; "Conservation Plantings on Critical Erosion Areas".

10. In general, control of vegetation along cleared utility rights-of-way should be accomplished by means other than the use of herbicides. These may include mechanical cutting; planting of, or selection for, low-growing plant species; open space recreational or agricultural use; and others. Herbicides, if used sparingly, selectively, on the ground, and on a site specific basis, are an effective and acceptable means to control target vegetation only (e.g. sprouts from individual tree stumps) so that low-growing vegetation can emerge and take over.

11. Utility line layout in subdivisions should be looped wherever feasible, or otherwise arranged so that a single break will not interrupt service to all customers on the line.

12. Where utility lines do not follow road alignment, they should be located using the appropriate criteria for minimizing environmental impact as are described in Topic 28: "Streets and Roads", "Development Standards for Streets and Roads in the Adirondack Park".

13. Utility poles should be located to blend to the extent possible with existing structures, vegetation, and topography to minimize aesthetic impacts.

ADEQUACY OF SERVICE

14. Assure the adequacy of such public utility services as shall be necessary for the project.

15. Avoid excessive demands on the capabilities of the public utilities.

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE ADIRONDACK PARK AGENCY AND NIAGARA MOHAWK POWER CORP.
REGARDING
INSTALLATION OF UNDERGROUND DISTRIBUTION LINES IN
ADIRONDACK PARK SUBDIVISIONS

INTRODUCTION

It is the purpose of this Memorandum of Understanding to establish procedures between the Adirondack Park Agency (APA) and the Niagara Mohawk Power Corporation (NMPC) which will enhance the aesthetic quality of subdivision roads in the Adirondack Park, reduce the costs of constructing well-designed subdivision roads in the Park, and provide for efficient underground electric distribution services to Adirondack Park subdivisions.

The Adirondack Park Agency Act requires a person to acquire a project permit from the APA if he proposes to undertake any of the following:

1. Any land use or development or any subdivision of land that is classified by the Act as a Class A regional project.

2. Any land use or development or any subdivision of land that is classified by the Act as a Class B regional project and that is not located within the jurisdiction of a local government that has a local land use program which has been approved by the APA.

NMPC provides electric service to a large portion of the Adirondack Park. In order to accomplish various environmental objectives, the rules and regulations of the Public Service Commission (PSC) require distribution lines which will furnish electric service to certain subdivisions be installed underground. Consequently, many subdivisions approved by the APA will be provided electric service by NMPC by means of underground distribution lines.

PSC's rules and regulations require that rights-of-way and easements for underground electric distribution facilities be cleared of trees and tree stumps and other obstructions and graded to within six inches of final grade. In the Adirondack Park the installation of underground electric distribution lines is in many instances accomplished parallel and adjacent to subdivision roads. Consequently, the area cleared for a subdivision road coupled with the additional areas cleared and graded for underground electric lines often results in excessively wide clearings along subdivision roads, which clearings detract from the aesthetic qualities of Adirondack subdivisions and are detrimental to the park-like and open space character of the Adirondack Park. Furthermore, this additional clearing and grading increases the cost of development in the Adirondack Park.

In order to maintain and enhance the aesthetic qualities of Adirondack Park subdivision roads and to reduce where possible construction activities and the cost of subdivision development in the Park, the amount of additional clearing along subdivision roads for underground electric lines should be minimized to the greatest extent possible, taking into account the necessity of project sponsors to develop viable and safe roads, the interests of the Park's local governments, the interests of NMPC in providing efficient electric service to subdivisions through the installation of permanent facilities initially properly located to the end that the subsequent relocation thereof will not be necessitated, and the objectives served by PSC's undergrounding requirements. This can be accomplished by carefully planning subdivision road systems in terms of present and future needs and by properly locating underground electric distribution lines within or immediately next to road rights-of-way.

I. Installation of Underground Electric Distribution Lines with Respect to Roads.

A. The attached "Typical Road Cross Section" sheets provide an accurate and reasonable basis for planning and establishing electric utility easements and underground electric distribution lines with respect to topographic conditions and roads in Adirondack Park subdivisions. These typical Road Cross Section sheets are attached to this memorandum and are made part thereof.

B. Additional Typical Road Cross Section sheets may be necessary to deal with situations not covered in the attached sheets, and such additional sheets will, as necessary, be agreed to by APA and NMPC and incorporated herein.

C. 1. Where roads in a subdivision will not be dedicated to a local government, the attached Typical Road Cross Section sheets will be deemed to read "Secure Private R.O.W." instead of the present reference to "Private R.O.W." and "Public R.O.W." with respect to the "Utility Easement" areas.

2. With respect to the term "Limit of Clearing" utilized in the attached sheets, such term shall mean the limit up to which trees are cut within the R.O.W. or the utility easement, as the case may be measured to the trunks of the trees. No trees will be cut beyond the "limit of clearing" (except as necessary to provide access to lots), except that limbs in the right-of-way that would interfere with undergrounding activities, as determined by NMPC, shall be

trimmed or removed by the developer. NMPC will in no event be held responsible for any trees damaged or destroyed beyond the "limit of clearing" by reason of root damage and may require provisions to this effect in the easements or R.O.W.'s granted by project sponsors to NMPC for underground distribution lines.

3. The Typical Road Cross Sections assume that soils are relatively stable (e.g., sands and gravels), or that positive internal drainage and/or lateral structural support is provided for wet soil conditions or for fine grained soils so that cut slopes will be stable on a 2 to 1 slope.

II. Planning and Review Procedure

A. APA's Application for Project Permit forms for all subdivisions greater than four lots will require the project sponsor to supply a letter from the appropriate utility company to APA which states whether underground service may be required for that subdivision, as described by the project sponsor. NMPC will respond to any project sponsor's request for such letter as promptly as possible. An application will not be deemed complete by the APA without such letter.

B. 1. Where a project sponsor has contacted NMPC in accord with (A) above, NMPC will have the opportunity on its own initiative during APA's review of the project under Section 809 of the Adirondack Park Agency Act to study the project proposal and to make recommendations to APA regarding the following matters:

i) the installation of underground electric distribution lines in the subdivision;

ii) the respective locations of roads, and utility easements and underground electric lines and the selection of the proper Typical Road Cross Sections to cover the various road sections in the subdivision;

iii) if the subdivision roads will be dedicated to a local government, alternatives to reduce the possiblity that the underground distribution lines will have to be relocated during their expected lifespan once installed.

2. During its review of a subdivision which will be serviced by NMPC underground electric distribution lines, APA will consider the matters identified above and will consult with the Project Sponsor and the local government involved and, if NMPC has expressed an interest in that subdivision, with NMPC. APA will, to the greatest degree possible, consider the views of all such parties before issuing a permit for the subdivision.

C. 1. With respect to projects which involve 25 lots or more and which will be serviced by NMPC underground electric distribution lines, APA will, prior to issuing a project permit for such a subdivision, require the Project Sponsor to submit for APA review and approval a detailed grading plan which shows:

i) final contours of roads and road R.O.W's;

ii) final contours of utility easements or R.O.W.'s which are within or which adjoin road R.O.W.'s;

iii) typical road cross sections of the subdivision roads as planned;

iv) exact locations of proposed sewer, water, telephone, CATV, natural gas, and electric distribution lines;

v) proposed limits of clearing;

2. In accordance with (B) above, NMPC will have the opportunity on its own initiative to study said detailed grading plan and to make recommendations to APA.

III. Permit Conditions

A. APA will include in its permit for any subdivision to be serviced by NMPC underground electric distribution lines permit conditions which specify those Typical Road Cross Section sheets which will control the construction of roads and installation of underground electric utilities in the subdivision. These permit conditions will be applicable to both roads that will be dedicated to a local government and roads that will not be dedicated.

B. 1. APA will include in its permit for any subdivision to be serviced by NMPC underground electric distribution lines permit conditions which control the following:

i) road construction

ii) revegetation of areas that are cleared for road construction and for installation of underground electric distribution lines;

iii) placement of sewer and water stubs, if any, at least two feet beyond the edge of the electric utility easement into the adjoining lots;

iv) installation of sewer and water lines, if proposed, prior to installation of electric, telephone, natural gas, and CATV lines;

v) location of transformers and associated facilities within property boundaries of adjoining lots and within the private portion of the limit of clearing to the maximum extent possible, utilizing the lot area adjoining the private portion of the limit of clearing to the extent necessary, or adjoining the limit of clearing where there is no such private portion.

vi) location of transformers and associated facilities as close as possible to the property line dividing adjoining lots.

These standards will be similar in purpose and content to those contained in Adirondack Park Agency Development Standards - Roads and Utilities. These standards will be developed by APA as part of its on-going project review responsiblities and are not part of this Memorandum of Understanding.

2. With regard to any subdivision to be serviced by NMPC underground distribution lines, permit conditions relative to cutting trenches for service lateral installation will be dealt with by APA on a project-by-project basis. NMPC will indicate its views with regard to this issue on its own initiative in accordance with Section II, and APA will consider these comments in accordance with Section II.

C. Where appropriate because of unusual site conditions, the permit conditions contemplated by this section may be modified. NMPC will indicate its views with regard to these situations on its own initiative in accordance with Section II. APA will deal with such

situations on a project-by-project basis in accordance with Section II. In all such cases, APA and NMPC will strive to insure that the purposes of this Memorandum of Understanding are fulfilled.

IV. This Memorandum of Understanding shall become effective June 1, 1975.

Note: The "Typical Road Cross Section" sheets referred to in this memo are the same as those in Topic 28: "Streets and Roads".

Richard Weber
Executive Director
Adirondack Park Agency

April 29, 1975
Date

Richard C. Cheney
Vice President - Research & Environmental Affairs
Niagara Mohawk Power Corporation

April 29, 1975
Date

WATER SUPPLY

Objective: Locate, design, construct, operate and maintain water supply systems so as to provide an adequate supply of potable water without adversely affecting existing water usage patterns or creating adverse effects with regard to aquifers and sub-surface drainage patterns.

General Guidelines: Comply with all state and local health standards with regard to the design, location, construction, operation and maintenance of water supply systems.

Description:

Water is made available for human use by such means as drilled, driven or dug wells, springs, infiltration galleries, cisterns, or surface water intakes. A water supply system includes the source of water tapped (e.g. lake, stream, or ground water) and the mechanisms for water intake, storage, transport, treatment and distribution.

A community water supply is a centrally managed system serving more than one user from one or more intakes. A public water supply is a community system administered by a unit of government and available to all potential users within range of its distribution system.

Further Guidelines:

WATER TO BE CONSERVED

1. Development and use of a new water supply system should not materially impair the supply available for other users or for natural features such as wetlands.

SUPPLY MUST BE ADEQUATE

2. A proposed water supply source and system should be adequate to meet the projected water demand in terms of both quantity and dependability. The project sponsor should demonstrate by appropriate means that the sustained water

yield of the proposed water supply is adequate to meet the projected average daily water demand and peak hourly demand for the system.

3. Aquifers or other ground water sources to be tapped should be adequate to handle all projected water demands for the project and to provide water for all other existing uses, including the support of natural vegetation and surface water.

4. A surface water supply source should be large enough and have an extensive enough contributory drainage area and inflow to supply all projected water demands for the project without significantly lowering normal water levels during periods of continued water usage.

WATER FOR FIRE PROTECTION

5. The project sponsor should demonstrate the availability of water for fire protection. If the water supply is to be used for fire protection, it should be demonstrated that such use would not cause a water shortage for other uses, and would be available in adequate quantity and at minimum pressure. If a central water system is or would not be adequate for fire protection, a static supply such as a pond or lake with a dry fire hydrant should be provided.

WATER QUALITY STANDARDS TO BE MET

6. The quality of the water supply should meet New York State Department of Health standards for its intended use (e.g., drinking, cooking, and food processing; bathing and swimming). Individual water supply systems should meet Department of Healths Standards. Community water supply systems should meet all applicable regulations of the Departments of Environmental Conservation and Health.

MEASURES TO AVOID CONTAMINATION

7. Plans for a water supply should be made and carried out to ensure that the water quality of the supply is maintained or enhanced on a continuing basis. Individual water supply systems should be located at least 100 feet from the nearest septic system tile drainage field and 150 feet from the nearest seepage pit. Wells to be located downgrade and in the general path of drainage from a sewage disposal system should be located at least 200 feet away.

WATERSHED PROTECTION

8. The watershed for a community surface water supply should be kept free of development and recreational activities which would have an adverse effect on water supply quality or quantity. Examples of such activities include extensive removal of natural vegetation, creation of large areas of impervious surfacing, and disruption of surface drainage patterns.

MEASURES TO MINIMIZE SITING AND CONSTRUCTION IMPACTS

9. The siting and construction of water system facilities and pipelines should minimize environmental disturbances. Community water systems should be constructed so that repairs can be made quickly and should have a sufficient number of valves to avoid flooding, excessive runoff and erosion in the event of a major break. Distribution should be looped wherever possible to avoid loss of water to all users if a break were to occur.

10. New individual water supply systems should be planned and designed in accordance with the guidelines and specifications contained in "Rural Water Supply" (N.Y. State Department of Health, 1966, Albany, New York. 64 pp.) New community water supply systems should be planned and designed according to guidelines and specifications contained in "A Public Water Supply Guide, Designing Community Water Systems" (N.Y. State Department of Health. Undated. Albany, N.Y. 35 pp.)

SECTION III

ECONOMIC AND GOVERNMENTAL CONSIDERATIONS

OBJECTIVES AND GUIDELINES

ECONOMIC IMPACT

A) ECONOMIC BENEFITS AND COSTS

Objective: Maximize net primary and secondary benefits to both private and public sectors of local/regional economy from the project.

General Guideline: Where economically justified, employ local/regional labor force for new short-and long-term jobs; where economically justified, purchase needed goods and services from local/regional suppliers; provide sufficient tax revenues to cover costs of increased demand for local/regional government services directly attributable to the project and its use; minimze adverse economic impact of the project upon the local/regional economy with respect to employment, income, housing, property values, public utilities, government ability to provide goods and services, economic stability, resource and environmental economic impact.

Description:

Local economy is any community within the Adirondack Park Region within which economic transactions (sales or purchases) are made by the various economic entities (e.g., households, business, governments) in the community and/or between that community and other communities in the Adirondack Park Region.

Regional economy is the economy of the Adirondack Park Region, comprised of each of the local economies and interactions among those local economies within the Adirondack Park Region, as well as interactions between the Adirondack Park Region economy and other (external) local and regional economies.

Net benefits equal the monetary value of total economic benefits less total economic costs of the project derived by the private and public sectors of the local/regional economy impacted by the project.

Primary benefits and costs equal the monetary value of the total direct economic benefits and costs of the project derived by the private and public sectors of the local/regional economy from the project. Examples of primary benefits include: labor income, wholesale and retail sales revenue, property income, and tax revenue directly generated by the project and its use. Examples of primary costs include: non-replenishable resources such as land, minerals, certain energy resources, certain environmental and ecological system elements, and historical landmarks; replenishable resources such as human resources, agricultural and forestry resources, certain environmental and

ecological system elements, certain energy resources, water, and air; replenishable goods and services such as construction materials and supplies, public utility services, and government services.

Secondary benefits and costs equal the monetary value of the total indirect economic benefits and costs of the project derived by the private and public sectors of the local/regional economy from the project. These secondary economic impacts depend upon the transmission of primary economic impact through the local/regional economy. It is this transmission of the primary economic impacts which characterizes the "multiplier effect".

Total economic impact equals the combined primary and secondary benefits and costs of the project derived by the local/regional economy. This represents not only the initial expenditures of money in the economy, but also the series of turnovers and resulting leakages out of the local/regional economy that subsequently occur as a result of expenditures on imports from outside the local/regional economy.

Further Guidelines:

EMPLOYMENT AND PURCHASES

1. Where quality, availability and price of local/regional labor force are sufficient and competitive enough to meet project requirements, the project should seek to meet its labor requirements by hiring from within the local/regional labor force. In order to determine whether the local/regional labor force is able to meet project requirements, the project should actively recruit all supervisory and non-supervisory employes, excepting "key personnel" from within the local/regional labor force from inception.

2. Where quality, availablity and price of local/regional materials and supplies are sufficient and competitive enough to meet project requirements, the project should seek to meet its materials and supplies requirements by purchasing from local/regional suppliers.

ECONOMIC IMPACT ANALYSIS

3. In determining whether or not an economic impact analysis of a proposed project falling within Adirondack Park Agency jurisdiction is required, the Agency will review the project in terms of its anticipated level of:

   a. Dollar value of project development costs
   b. Dollar value of income generated

c. Dollar value and size of land use
d. Dollar value and size of structures
e. Labor market impact
f. Housing market impact
g. Land and other real property market impact
h. Public utilities impact
i. Government fiscal impact
j. Economic stability impact
k. Resource and environmental economic impact
l. Project user economic impact,
m. Intangible economic impact for which no "market" may exist
n. Project-specific economic impact not included elsewhere.

In assessing the local/regional economic impact of the proposed project, primary responsibility for estimating the economic impact of the project rests with the project sponsor.

4. Intangible benefits and costs are equal to the monetary equivalent of goods and services, amenities, and other benefits and costs for which a market place may not previously have existed. Such benefits and costs may be subjective as they include the enjoyment of scenic views, enhancements of public safety, personal services, health, welfare and others.

PROJECT USER BENEFITS

5. Primary benefits is simply the economic value of the project's use to the actual users and is represented by market demand for the use of the project. For example, if the project was a commercial recreation business, the annual value would be the sum of admission charges income. In the case of a residential development, primary user benefits would be equal to the transfer prices of the real estate (lots and structures).

6. Secondary benefits, by definition, are not derived by the project users from the primary benefits of the construction or development of a project. Project users may, however, derive secondary benefits from the transmission of their primary user benefits through their economic transactions.

7. Intangible benefits may be very important to project users. Examples include an improvement in quality of life, recreational experience, a sense of place, and others.

ECONOMIC COSTS

In estimating economic costs of a project, two types of costs are relevant. Frequently, only the first type, "out of

pocket costs", are considered when the second type, "opportunity costs", is relevant.

8. Out-of-pocket costs equal the monetary value of total direct and indirect expenditures to bring the project into the local/regional economy and to support or maintain the project during its use. A portion of out-of-pocket costs will be spent internally as wages and sales revenue and other domestic purchases, having both primary and secondary benefits to the local/regional economy. Yet, another portion of out-of-pocket costs may represent leakages from the local/regional economy in the form of project soliciting costs, external expenditures on goods and services, etc. Such costs can be treated as either "sunk costs" or "costs of doing business" and may be added to the capitalized value of the project costs to the local/regional economy.

9. Opportunity costs equal the monetary value of the income which would be derived by allocating resources to their next best alternative. The usefulness of the "opportunity cost" approach, is that it forces the decision maker to compare the estimated benefits from one project against those of an alternative project, both of them requiring the same "out of pocket costs" or "investment". The greater the "investment", the more pertinent the "opportunity cost" approach becomes. Where feasible, the opportunity cost approach is recommended, as it represents the true economic cost of an investment.

DISCOUNTED PRESENT VALUE

10. The discounted present value equals the value today of future economic benefits or costs of a project, discounted at a rate of interest which reflects the riskiness of the project and the decision maker's preference for present income over future income. The DPV method of project valuation, from both a "benefit" and "cost" side is recommended particularly for projects involving several years of cash flow, and especially for large dollar investments. This method is further described in Appendix E, pg. 4.

HOUSING

11. Rural communities, typically characterized by near-zero vacancy rates and aged housing stocks, are very sensitive to "shocks" in either housing supply or housing demand conditions which may be generated by economic development projects. For this reason, conscious effort should be made to evaluate the impact of each project on the impacted housing market, which frequently extends beyond the immediate community within which the project is located.

PROPERTY VALUES[1]

12. Real property represents the dominant share of all personal tangible assets and more than one-third of all personal wealth in the nation. Among middle income households residing in owner-occupied housing, about one-half of total personal wealth is in the form of real estate. If new residential or non-residential construction changes the value of existing property, it also affects the wealth and income potential of property owners. Such changes, likely as new development opportunities increase inmigration, can have a fiscal impact on a community. Changes in property value, when reflected in higher or lower housing costs, have a social effect, particularly on low-income residents who allocate a substantial share of their income to shelter.

Major Determinants of Land Value

a. Residential Use. The value of land at a particular site, especially residential land, is a function of several characteristics including: accessibility, neighborhood and community amenities, topography, income of residents, and nearby open space. Unless transportation facilities are involved, new developments will have only a marginal immediate impact on accessibility to an area.

   The impact of new development, residential or non-residential, on amenities of adjacent or nearby residential areas can be substantial. Development which enhances the amenities of a residential area will increase the economic value of real estate in that area, and conversely.

b. Non-Residential Use. Non-residential property and high density residential property values are more sensitive to differences in accessibility than are low density residential housing values. Land zoned for commercial use is extremely valuable if located near intersections of major roads or urbanized areas. Industry property is generally valuable if located near major transportation facilities such as highways, railroads, and, to a lesser extent, airports. Proximity to complementary industries, suppliers, and labor force also increase industrial land values.

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[1]Thomas Muller, Economic Impact of Land Development: Employment, Housing and Property Values, The Urban Institute, Washington, D.C., 1976.

c. Anticipation of Further Growth. A new development is most likely to have its greatest effect on the value of real property located close to the project. A large shopping center, for example, will have little measurable effect on the values of property (land or structures) four or five miles away; however, the value of property adjoining the new development may change. The property value impact of a development project may be positive or negative, or some combination of both. In this example, additional growth can cause nearby residential structure values to drop due to increased noise, air pollution, lights, and traffic generated in the use of the shopping center. If additonal growth, which would transfer existing residential land use to commercial land use, is not expected to take place in the area nearby the new shopping center, nearby residential property values can be depressed. Housing a mile or so away from the shopping center may increase in value, since accessability to shopping and employment is improved without congestion and other adverse effects. However, if the new shopping center is expected to attract complementary retail stores and office space, the land component of existing residential property immediately adjacent will increase. The land component may increase in value so much that existing housing units will be moved or demolished, if zoning to allow commercial development can be easily obtained. The components of land value attributable to future growth represents anticipated rents or capital gains in the future sale of the land for non-residential use.

From the community or regional perspective, however, the increase in land values near the new development will be partially or fully offset by reduced land values in other parts of the community (region), unless economic activity throughout the community (region) increases sufficiently to maintain the relative economic values of all parcels and uses of land. That is, a new shopping center or other development project may merely shift economic activity from one area to another, with little or no net gain in total property value of the community (region). Thus, while property owners near the site may benefit substantially, all other owners in the region could experience a minor or perhaps immeasurably small loss. If these shifts are concentrated within one community in the region, considerable fiscal impact could result.

ECONOMIC STABILITY

13. Local and regional economies are, due to their smaller size and less diversified structure, generally more sensitive to destabilizing forces than state or national economies. Consequently, individual projects of seemingly small magnitude or insignificant impact on the state or national economy can have pronounced and lasting price level and business fluctuation impact on a community or region. The myriad of possibilities is too great and varied to elaborate on here. Nonetheless, the potential importance of destabilizing forces of local and regional development projects make it imperative that due consideration be given them prior to acceptance or rejection of the proposed project. Such foreknowledge can be extremely helpful in avoiding both short and long term adverse economic impact through proper planning and adjustment to the stability requirements of the local/regional economy "with" or "without" the project.

ECONOMIC IMPACT

B) GOVERNMENT SERVICE AND FINANCE[1]

Objective: Ensure the financial ability of local/regional government(s) to provide services and facilities made necessary by the project.

General Guideline: Determine the proposed project's effect on both fiscal balance and fiscal capacity for each local/regional government body impacted (i.e. county, town, village, school district, special district); plan and implement development phases at a level and time commensurate with the favorable financial capability of the impacted governments; include in project plans provisions to alleviate any potential adverse impact upon the ability of governments to provide necessary services and facilities.

Description:

Fiscal impact analysis is an evaluation of a development projects expected impact on a local/regional government's financial requirements and ability to provide services. It estimates the economic effects on both fiscal balance and fiscal capacity, and determines if a project can "pay its own way" in terms of government services and facilities.

Fiscal balance means the overall net change in public revenues less public operating expenditures and capital expenditures for the necessary services and facilities (e.g., public education, recreation, police and fire protection, general government, public health services, public sewer and water services, sanitary landfill and transportation).

Fiscal capacity means the impacted government's ability to operate within the statuatory real property tax and debt limits, in providing the services and facilities necessary to the project.

Further Guidelines:

FISCAL IMPACT ANALYSIS

1. Analyzing fiscal impact depends to a considerable extent

[1] R.C. Craig, A General Methodology for Fiscal Impact of a Development Project, Adirondack Park Agency, Raybrook, NY 1976.

on whether the government will maintain or change its level and quality of services in the community. The approach discussed here for assessing fiscal impacts is based on the assumption that current service quality, tax structure and tax rates are to be maintained.

FISCAL BALANCE

2. Fiscal balance determines the net change in public revenues less public operating expenditures and annualized capital expenditures. A separate analysis should be performed for each local/regional government body impacted (i.e., county, town, village, school district, special district).

Public revenues accruing to local/regional governments in New York State can be grouped into five categories: 1) revenues related to real property; 2) revenues associated with income and expenditures; 3) per capita, per pupil or other per "population unit" revenues; 4) user charges and/or service fees; and 5) miscellaneous revenues which include fines, licenses, and other items.

By level of government, the aforementioned revenues should be allocated according to standard accounting procedures.

Public expenditures are the "other side" of a fiscal balance. While revenues represent "benefits" to a local/regional government, expenditures reflect "costs" of a land development to government. As with revenues, expenditures should be calculated by taxing jurisdiction (i.e. county, town, village, school district, special district).

Government expenditures can be grouped into operating and capital costs. The former for normal maintenance and operation whereas the latter is for new facilities or equipment. Both should be estimated on an annual basis when calculating expenditures for each year of the time horizon.

Public education, recreation, police and fire protection, general government, public health services, public sewer and water service/sanitary landfill and transportation are the types of public services which will be generally described and costs estimated for in this expenditures section of "Fiscal Balance".

For each public service or facility needed, additional demand must first be estimated. In order to do this, the fiscal analyst must estimate both social and institutional requirements. The social desires involve population pressure on the various services.

On the other hand, institutional or statutory mandates often require a minimum level of performance of service.

FISCAL CAPACITY

3. The Local Finance Law specifies certain tax and debt limitations for local governments generally throughout New York State and additional limitations for towns wholly or partly within the Adirondack Park. These limitations are specified either by the State Constitution or by statute and regulate for purposes of sound government administration, and reasonable burdens on real property taxpayers. They control the ability of a local government to tax and incur debt.

Definitions:

1. "Indebtedness" shall mean in relation to a town, village, school district or fire district, any indebtedness other than that excluded by law, in ascertaining the power of such taxing jurisdiction contract obligations such as bonds, notes or other evidences of indebtedness.

2. "Taxation" shall mean total ad valorem real property taxes within each local taxing jurisdiction for all purposes.

3. "Aggregate taxable assessed valuation" shall mean the assessed value of all real property subject to taxation for any purpose by the town, village, school district or fire district within which it is situated.

4. "Full Valuation of Real Property" shall mean the aggregate taxable assessed valuation of real property in a town, village, school district or fire district, divided by the equalization rate for the municipality, school district or fire district which is established by the New York State Board of Equalization and Assessment and County Board of Equalization and Assessment.

GOVERNMENTAL REGULATIONS

Objective: Conform development activities to all applicable governmental rules and regulations.

General Guideline: Comply with all applicable ordinances, rules and regulations of all governmental agencies with responsibilities for such activities, including those of towns and villages, counties, the State Departments of Health and Environmental Conservation, and the Adirondack Park Agency.

Description:

Regulations means all local, state and federal laws, ordinances, rules and regulations which apply to projects undertaken in the Adirondack Park. The primary government agencies involved in issuing permits for subdivisions and new land uses and development are the towns, villages and the State Departments of Health and Environmental Conservation as well as the Adirondack Park Agency.[1]

Further Guidelines:

LOCAL GOVERNMENTS

1. All projects must comply with applicable town, village, and special district rules, regulations, and ordinances. These will include zoning ordinances, subdivision regulations and sanitary codes, may in addition include building codes; flood plain, junk car and sign ordinances; and mobile home ordinances. If a town or village is developing a local land use program, the project must comply with that development plan.

2. Appropriate local government officials including town supervisors, development administrators or zoning officers, planning, zoning and appeals board chairmen should be contacted to determine the need for compliance with one or more local review procedures.

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[1]Although the burden of obtaining all necessary permits must be on the developer, the Agency will assist anyone in determining the various governmental units his proposal must be submitted to and inform him as to whom he should contact for further information.

3. The project should be in accordance with the town comprehensive plan (if the town has one) and be compatible with existing and proposed uses in the land use area in which it is to be located. Local review should ensure such compatibility.

4. A site inspection with local government officials is a helpful (and sometimes required) way to obtain opinions as to the potential impact(s) of the project on the local community.

STATE AGENCIES

5. "A New Guide for Project Sponsors in the Adirondack Park" is available from the Adirondack Park Agency, the Department of Environmental Conservation, or the Department of Health. It explains how to contact the agencies to determine when and from whom a permit is necessary, and describes the entire project review process.

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REFERENCES

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APPENDICES

APPENDIX A

FRAGILE ECOSYSTEMS AT HIGHER ELEVATIONS

ALPINE LIFE ZONE.

The alpine life zone represents one of New York State's rarest natural resources, being limited to approximately 85 acres of land within the Adirondack High Peaks area. It lies above timberline and is characterized by extremely harsh microclimatic conditions. The plants and animals which have adapted to life in this zone are, for the most part, unique to the alpine habitat; many of them being rare or endangered species within New York State.

Depending upon a number of environmental factors such as exposure, degree of slope, aspect, and soil moisture conditions, alpine life zones occur at altitudes ranging from approximately 3700 ft. to 4900 ft. above sea level. In view of the thin, wet, highly organic, infertile soils which typify alpine habitats and the relative inaccessibility of these areas, physical limitations to their development are considered to be overriding.

SUBALPINE LIFE ZONE.

The geographical location and altitudinal extent of subalpine life zones are determined by a multitude of microclimatic and edaphic (soil-related) factors which combine to produce a habitat type which, by definition, is located just below the alpine zone. As a general guideline, subalpine zones are distinguishable at approximately 3800 ft. in elevation and continue upward to timberline on these peaks which display an alpine zone. A key vegetational feature of the subalpine zone is the virtual dominance of balsam fir within the forest canopy, in contrast with the red spruce-dominated forests of lower elevations.

The environmental factors (both physical and biological) which characterize the subalpine zone form an ecosystem which, in New York, is unique to the Adirondacks and in which development (with the possible exception of carefully constructed foot trails) would almost invariably result in undue adverse environmental impacts.

BOREAL LIFE ZONE.

In the vicinity of the 2500 ft. elevation, northern mixed-hardwood forests consisting, in large part, of variable mixtures of sugar maple, American beech, yellow birch, balsam fir, hemlock, white pine, and red spruce reach their altitudinal limit and grade into what is referred to as the spruce-fir, boreal, boreal-montane, or northern coniferous forest.

The environmental parameters which cause many of the mixed-hardwood forest species to lose vigor and give way to the spruce-fir association also serve to limit the development potential of a site. Examples of these conditions include organic, infertile soils; the existence of a "frost pocket"; a north or north-westerly exposure; and poor water drainage due to the presence of an indurated soil horizon or shallow bedrock. Northern hardwoods generally require deep, fertile, well-drained soils in which to thrive, and where they are unable to find suitable conditions, they are out-competed by northern conifers. Development in boreal forests must be carefully planned and carried out to avoid causing adverse environmental impacts, and should be severely limited in scope and intensity.

APPENDIX B

" CONSERVATION PLANTINGS ON CRITICAL EROSION AREAS"
by the Soil Conservation Service, U.S. Department
of Agriculture, 1975

CONSERVATION PLANTINGS ON CRITICAL EROSION AREAS

USDA
SOIL CONSERVATION SERVICE
SYRACUSE, N. Y.

CONSERVATION PLANTINGS
on critical erosion areas...

Erosion and sediment damage is a major conservation problem in New York. During the past 40 years the Soil Conservation Service has been working with New York's 56 Soil and Water Conservation Districts to reduce erosion in the state. Thousands of landowners have established conservation plans and practices to protect the land from erosion by wind and water.

The most effective and economical way to keep the soil from eroding is through the establishment of appropriate vegetative cover. The type of cover that should be used depends on the needs of a particular site.

The following information gives the characteristics of some types of plantings, tells how the site should be prepared to insure successful planting, and provides recommendations for selected critical erosion areas.

A critical erosion area is any erodible, sediment producing area such as rapidly eroding cropland, overgrazed pastureland, construction sites, streambanks, ditch and channel banks, surfaced mined areas, sandblows and dunes, beaches, denuded and gullied areas, and sanitary landfills.

Soils

Often the soil material on which seeding or planting is to be done consists of some part of a subsoil layer. These materials are usually infertile, poor in structure and aggregation, low in organic matter and may be highly acid. In many cases they are highly susceptible to erosion due to slow water intake and rapid runoff. To aid in overcoming these poor conditions organic matter can be applied in the form of manure, lime applied where needed, and appropriate commercial fertilizers added.

Where topsoil has been removed, four inches or more of loamy topsoil applied to the site before seeding enhances establishment of ground cover and minimizes maintenance.

Site Preparation

Where equipment is to travel over the site during planting and/or for maintenance after establishment, slopes should be no steeper than 3:1. Leave trees and shrubs wherever possible.

1. Install any necessary water control measures such as:
   a. diversion ditches
   b. waterways or outlets
   c. drainage ditches
   d. subsurface (tile) drainage
   e. bench terraces
   f. plow furrow (small areas)

Disking seedbed prior to seeding

2. Test soil to determine need for lime and fertilizer.
3. Remove all debris, such as stones, tree stumps, etc.

Seedbed Preparation

Scarify surface to a depth of at least 2 inches with a disk or other suitable methods. In some situations, such as drainage ditch banks, scarification can be excluded if lime, fertilizer and seed are applied to the roughened surface within 24 hours after digging.

Apply lime and fertilizer according to soil test or based upon known needs of the soil. Mix them into the surface soil to a depth of at least 2 inches. If lime and fertilizer are applied by hydroseeder, mixing is not required.

The following are suggested application rates for permanent seedings:

1. Apply the amount of lime needed to attain a pH of at least 6.0 if legumes are included in the seeding mixture. If only grasses are to be seeded, a pH of 5.5 is acceptable.

2. Apply at least 60 pounds each of nitrogen, phosphorus, and potassium (600 lbs. 10-10-10 or equivalent) per acre. Nitrogen application can be reduced by one-half for every 10 tons of manure applied. Manure can be worked into the soil as deep as practicable.

3. Where possible, lime and fertilizer should be incorporated into at least the top 2 inches of soil by disking or other suitable means.

Whenever available, manure should be applied to any critical area before seeding. A rate of 20 tons per acre is suggested. Work it into the soil as practicable, especially on waterways and spillways. Manure helps to improve soil structure.

Seed Specifications

Whenever available, certified seed should be used. Legumes should be scarified if necessary and inoculated with the proper strain of nitrogen-fixing bacteria before seeding. Use only strains adapted to local climatic conditions.

The section beginning on Page 22 and Table 1 contains information on plant characteristics, adaptation, use suitability and level of maintenance required. Suggested rates of seeding and seed mixtures for specified uses are shown in Tables 2 and 3 for permanent seedings, and in Table 4 for temporary seedings.

Time of Seeding

Good results are usually attained from seedings or plantings that are done in the spring before May 15 or in late summer after August 10. Spring seeding legumes is recommended, however, late summer seedings prior to September 1 can also be made. When crownvetch is seeded in late summer at least 35 percent of the seed should be hard seed (unscarified).

Temporary seedings of annual ryegrass or spring oats or a combination of them may be made any time during the early or mid-spring season. Sudangrass or annual ryegrass may be used for late spring and summer seedings. Annual ryegrass or winter grains may be used for late summer and fall temporary seedings.

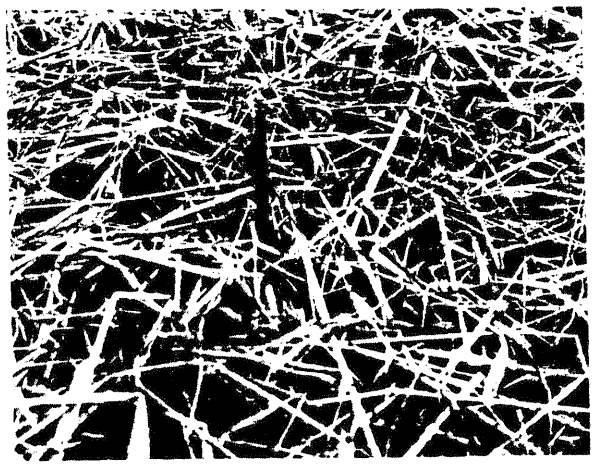
Temporary seedings of spring grains and annual ryegrass may be made in August. Permanent seedings of perennial grasses and/or legumes may then be overseeded in the spring. For other temporary seedings where regrowth is desired in the spring, winter hardy grains or perennial ryegrass may be seeded in August or early September.

If seedings or plantings are made during dry periods (May 15 - August 10) irrigation may be necessary to insure a successful seeding.

Mulching

Mulching is a very important step in establishing vegetation on critical areas. A mulch cover will help hold moisture, protect soil from erosion, hold seed in place,

Proper mulch rate and distribution



and keep soil temperatures more constant. It should be applied uniformly by mechanical means or by hand. Some bare soil should still be visible through the mulch. Too heavy an application in the spring may retard soil warm-up rate.

Hay or straw or other fibrous mulches are best for mulching newly seeded areas. Some of the mulches are subject to blowing and must be kept moist or tied down.

Mulch materials may also be used alone as a temporary ground covering measure for minimizing soil erosion.

"Hydromulching" is a process by which water and various combinations of seed, fertilizer, pulverized limestone, inoculants, wood cellulose and even compatible insecticides and fungicides are mixed in a tank to form a slurry. The slurry is held in suspension by continuous agitation. The material is sprayed over the

area to be seeded, under high pressure. Wood cellulose mulch is suitable only in a slurry. It cannot be used for dry applications. See Table 5 for guide to mulching materials, rates and uses, and Table 6 for mulch anchoring.

Seeding or Planting

Drill - A grass drill is the best method of seeding on nearly level to sloping areas, but the preferred method will depend on slope and conditions of the planting site. Very small seed must be seeded no more than 1/4 to 1/2 inch deep. If drill does not have a packer attachment, a packer should be trailed behind it. On steep slopes where drilling is not feasible, hydroseeding is an alternative method.

Hydroseeder - This method of seeding is best for steep, inaccessible areas where a drill is difficult or impossible to use. When applying seed, lime, fertilizer or mulch materials with the hydroseeder, use not more than 100 - 150 pounds of solids per 100 gallons of water. It is best to apply lime and/or fertilizer first, then apply seed followed by the mulch. Salts in fertilizers are detrimental to the legume inoculant, however lime is not. If legumes are not included in the seed misture, the seed may be mixed in a slurry with the lime and fertilizer. Hydrated lime should not be used when seed is mixed into the slurry.

When legume seed is to be included in a slurry mixture containing fertilizer, the amount of inoculant added to the tank should be four times the rate prescribed by the

Applying seed and fertilizer with hydroseeder.

Hand broadcasting grass and legume seed.

manufacturer.

It is preferable to hydroseed when the soil is moist.

Broadcast - Seed may be broadcast by using a whirlwind or cyclone seeder or by hand. If spread by hand, seed may be mixed with sawdust to aid in attaining an even distribution. Cover seed with 1/4 inch of soil or less by cultipacking or raking, or other suitable methods.

Sprigging - This is done by planting a shoot, root or sprout of a plant. It is a costly method, but sometimes necessary to establish some plants on critical situations. Sprigging should be done in early spring about the time normal plant growth starts. Lime and fertilizer should be applied in accordance with the needs of the species to be planted.

Sodding - Covering an area with sections of sod for quick soil protection. Select a dense sod, preferably one containing suitable varieties for site to be sodded. Sod should

be at least one year, but not more than 3 years old. It should be placed within about 12 hours of cutting. If temperatures are high, 6 hours is the maximum. Lay strips of sod across slope beginning at the bottom. Stagger joints and make sure ends and sides are butted up tightly. Roll when possible to bond with soil surface. Irrigate during dry periods.

Maintenance

Fertilization - When seedings or plantings consist of only grasses, an application of nitrogen fertilizer should be applied annually at the rate of about 40 pounds per acre or 1 pound per 1000 square feet. A complete fertilizer should be applied if there is reason to believe that phosphorus and potassium are not adequate. If soil test can be obtained, fertilizer should be applied as tests indicate.

Where legumes are included in the plantings nitrogen applications are usually not necessary.

Recommendations for Selected Areas

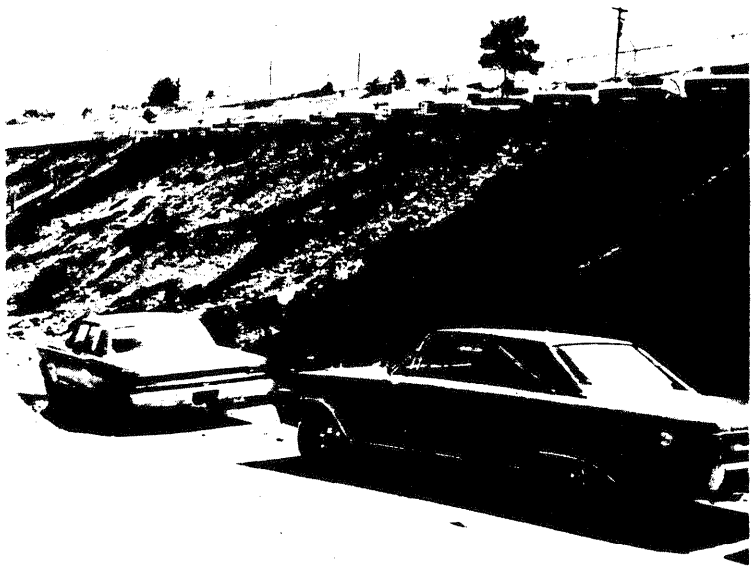
There are many kinds of sites in New York where critical erosion may be a problem. Several common sites are listed below along with general recommendations for treating them.

Gravel pit in rough, unsightly condition

Gravel Pits - Grade and shape site as necessary. The amount and kind of grading and shaping required will vary with planned use. For example, a recreation development may require grading for access roads, trails, picnic or camping sites, etc., while a wildlife development may need only minor reshaping of steep banks to facilitate revegetation. It should be noted that proper planning of operations during the excavation of the material can greatly reduce the amount of reshaping required for satisfactory establishment of vegetation.

Regardless of planned use, all banks should be reshaped to a maximum slope of 1:1. On some types of soil material, the banks should be no steeper than 3:1. If equipment is to travel on the slopes when revegetating, they should not exceed 3:1.

Eroding roadbank left unprotected



Roadbanks - Old roadbanks often appear shingled with stone fragments. On these sites the soil should be scarified if a hydroseeder is to be used to apply lime and/or fertilizer. If lime and/or fertilizer is broadcast and worked into at least the upper 2 inches of soil, that is sufficient scarification for the subsequent seeding.

New roadbanks should be limed and/or fertilized, seeded and mulched as soon as possible after earth work is completed. Seedbed conditions are best immediately after grading and become progressively poorer as the site is exposed to the rain and sun.

Construction Sites - There are several important principles to be considered in vegetative control of erosion and sediment on construction sites.

- Soils should not be exposed for more than about 15 days, unless construction is to resume within 30 days. If construction is suspended for some reason, areas should be seeded and/or mulched without delay.

- Carefully select plant species that are adapted to the site and the purpose for which they are to be used.

- Do not burn the protective vegetative cover from site. Bare areas are vulnerable to erosion.

- Grade to slope that allows for ease in planting and maintenance.

- Stockpile topsoil for use on areas that need it for establishing vegetation.

- Minimize disturbance of natural vegetation.

- Limit removal of vegetation to the smallest possible areas to accomplish construction objectives.

Rural Homesites - There are usually areas that can be seeded immediately following the completion of clearing and shaping of the site. Vegetative cover should be established on all areas that lie outside of those needed for construction activities. Doing so will help reduce erosion and sedimentation. Lime and/or fertilizer and seed should be applied as soon after earth work is completed if possible. If this is done, scarification of the seedbed may not be necessary.

Dikes, Levees, Dams, Pond Banks, Terraces, Diversions or Other Earth Works - Select plant species that are adapted to the site. If site is to be mowed regularly for esthetic purposes, grasses such as Kentucky bluegrass and creeping red fescue should be seeded.

Industrial Areas - During the development of industrial sites, there are many places that should be protected by a vegetative cover. Areas where construction activities will not take place should be vegetated as soon as possible after the earth work is completed. Species requiring little or no maintenance can be used on many of these areas.

Sandblows, Dunes and Beaches - Few plants will stabilize eroding sandy areas. American beachgrass has been successful in some situations. It is necessary to plant clones of this grass. As the grass begins to stabilize the sand, other plant varieties can be established. Site preparation: usually the area has to be smoothed or in the case of dunes, some shaping may be needed before planting American beachgrass.1/

1/ Planting or sprigging beachgrass - the best planting time is in early spring before May 15. Plant clones containing 3 to 5 stems (culms) about 8" deep at a spacing of 18" apart in rows. Rows should be staggered 18" apart. A 12" x 12" spacing will stablize an area faster and should be considered when patching blowout areas. Fertilize the planted area with 10-10-10 fertilizer or equivalent, at a rate of 400 pounds per acre at planting time. Follow this with ammonium nitrate at 150 pounds per acre in July. Continue this fertilizer treatment annually until an adequate plant cover is established.

Vines and Ground Cover Plantings

Many vines and other low growing ground cover plants are beneficial in protecting the surface soil from erosion and improving the visual appearance of disturbed areas.

The following are guidelines for planting vines and other ground cover.

Use good quality planting stock adapted to soil and site conditions. Keep plants moist and cool until planted. Make plantings early in the spring. Space plants 1 to 4 feet apart depending on density of cover needed and species planted. Apply a small handful (2 to 3 tablespoons) of fertilizer (10-6-4 or equivalent, with 50% slow release N) and mix with soil around the plant roots.

Where mulch is used it should be pulled back a few inches from plants to eliminate winter nesting for field mice. Plants should be checked in spring of their second year and be replaced as needed.

Trees and Shrubs

Trees and shrubs not only aid in stabilizing critical areas, but serve many other environmental purposes. For example, they are good for decorative purposes, screening objectional views, controlling sound, wind and sun, they aid in lowering temperatures and increase humidity, and in addition, help to purify the air.

The purpose for planting a tree or shrub should be clearly determined before making a species selection.

Evergreen trees and shrubs should be balled and burlapped when moved for transplanting. Deciduous trees up to 2 inches in diameter can be moved bare rooted, except when in full leaf. All pits for planting should be dug at least 2 feet wider than the root spread of the tree or shrub to be planted. At least 4 inches of topsoil should be placed under the root system. Spread roots in a natural position, clip off those that are broken and bruised. A crumbly, rich topsoil mixture composed of one-third peat moss or humus should be worked in among the roots, gently moving plant up and down to assure soil and root contact. Also, this helps prevent air pockets. When roots are covered, firm the soil by tamping on it.

Newly planted trees need not be fertilized the first year. However, it is recommended that a slow or controlled release fertilizer, such as sulfur coated urea, be placed in the bottom of the hole at time of planting. This will supply the fertilizer needed during the next year or more.

Deep thorough soaking is favored over frequent surface watering. All broken branches should be pruned at planting time. Severe pruning is not needed with nursery grown stock and when trees are watered as needed. Each tree should be firmly guyed or supported by means of an upright post driven into the ground parallel to the trunk. Care should be taken not to injure the roots when driving the post. Attach the post to the tree by threading wire through a piece of rubber hose where it comes in contact with the tree.

Important considerations when selecting trees or shrubs are:

- Select small species of trees when planting under utility wires.
- Avoid planting directly over or near water and sewer lines or buried telephone and power cables.
- Plant trees away from buildings.
- Form, beauty, ultimate size, hardiness and soil preference of trees and shrubs should be considered.

Descriptions of Grass and Legume Species

The following describe characteristics, qualities and tolerances of plants recommended for use in vegetative stabilization of critical erosion areas.

Agrostis alba L. - Redtop

Tolerant of acid soils and droughty to poorly drained conditions. Emerges quickly to form protective cover. Is low growing and has a creeping habit of growth. Although vigorous in the seedling stages, redtop does not seriously compete with slower growing species. The strength and rhizomatous character of the roots make it a good plant for erosion control.

Alopecurus arundinaceus Poir. - Creeping foxtail

A broadleaved, cool-season grass that grows well on wet, acid soils. Plants are strongly rhizomatous and

start growth early in the spring. Light fluffy seeds and slow seedling development sometimes make planting and establishment difficult.

Andropogon gerardi Vitam - Big Bluestem and Andropogon scoparius Michx - Little Bluestem

Warm season grasses having dense root systems and growing in large clumps. Under favorable conditions big bluestem grows up to 6 feet tall and little bluestem to 3 feet tall. Little bluestem is more drought tolerant than big bluestem.

Bromus inermis Leyss - Smooth Bromegrass

A winterhardy forage grass that spreads by rhizomes to form a coarse dense sod. Is very tolerant of heat and drought. Grows on a diversity of soil types but is not tolerant of poorly drained areas. Has good seedling vigor but is slow to establish a sod.

Erogrostis curvula (Nutt.) - Weeping Lovegrass

A warm season bunch grass having rapid, early growth. Spreads by tillering so that individual plants may be 12 to 15 inches in diameter in 2 to 3 years. Will grow on low fertility soils.

Festuca arundinacea Schreb. - Tall Fescue

Tolerates poor drainage and can survive winter flooding. Will grow on alkaline or saline soils. Although

Good tall fescue growth protects the soil surface.

considered a bunch grass, tall fescue spreads slowly by short rhizomes. Produces coarse, tough turf that resists traffic.

Festuca rubra L. - *Creeping Red Fescue*

A cool season grass that spreads by underground root stalks. Adapted to a wide range of soil types. Tolerant of dry sites and valuable for its shade tolerance. A short grass used for mowed areas or general purpose turf.

Lolium perenne L. - *Perennial Ryegrass*

A bunch grass having very rapid seedling growth. Tolerates fairly wet soils and can stand only short periods

A dense cover of deertongue on a bank

of flooding. Used to provide quick protective cover on exposed soils. Does not withstand hot, dry weather or severe winters.

Panicum vergatum L. - Switchgrass

A perennial, warm season grass with short rhizomes and coarse stems. Has good seedling vigor and is best adapted to moist fertile soils. Will tolerate extremely acid soils, pH 4.0 to 4.5, and droughty sites.

Panicum clandestinum L. - Deertongue

A perennial, warm-season grass which normally reaches a height of up to 3 feet. Spreads slowly by rhizomes. It is the most acid-tolerant of the grasses described, is drought tolerant and adapted to low-fertility conditions.

Phalaris arundinaces L. - *Reed Canary Grass*

Will grow on poorly or well drained soils. Is tolerant of both flooding and drought. Especially suited to swampy areas. Spreads by short scaly rhizomes which can be used for vegetative propagation. Has coarse stems and broad leaves. Seed germinates slowly and loses viability after 1 year of storage. Use only fresh seed.

Poa compressa L. - *Canada Bluegrass*

Similar to Kentucky Bluegrass described below, except it is more shade tolerant. It can also be used to an advantage under conditions too dry or not otherwise entirely favorable to Kentucky Bluegrass.

Poa pratensis L. - *Kentucky Bluegrass*

Grows best on well drained fertile soils. Establishes slowly but spreads by rhizomes to make an excellent, smooth turf. Becomes dormant during hot, dry weather. Used both as lawn and pasture grass.

Coronilla varia L. - *Crownvetch*

A winterhardy, perennial legume that grows best on well or moderately well drained soils. Spreads by underground root stalks and self seeding. Will persist on moderately acid soils, but seedling growth is more

Crownvetch provides cover for slope.

Lathco flatpea planting on a hill

vigorous when acid sites are limed before planting.

Lathyrus sylvestris L. - Flat Pea

A perennial, rhizomatous legume with long viny stems. Not adapted to wet sites, but will persist on moderately well drained soils. Seedlings are slow to develop, however once established, plants are vigorous and form a thick vegetative ground cover.

Lotus corniculatus L. - Birdsfoot Trefoil

A winterhardy, perennial legume adapted to well or poorly drained soils. Under favorable conditions trefoil will spread by reseeding. Tolerant of medium acid soils, but grows more vigorously if acid sites are limed.

TABLE 1 A - Grass and Legume Planting Guide
Growth Habit, Season & Soil Drainage Tolerances

COMMON NAME	BOTANICAL NAME	Growth Habit	Season		Soil Drainage Tolerance				
			Cool	Warm	Dry (Not Droughty)	Well Drained	Mod. Well Drained	Somewhat Poorly Drained	Poorly Drained
Bluegrass, Canada	*Poa compressa*	P1R	X	-	X	X	X	-	-
Bluegrass, Kentucky	*Poa pratensis*	P1R	X	-	-	X	X	X	-
Bluestem, Big	*Andropogon gerardi*	P1B	-	X	X	X	X	-	-
Bluestem, Little	*Andropogon scoparius*	P1B	-	X	X	X	X	-	-
Bromegrass, Smooth	*Bromus inermis*	P1R	X	-	X	X	X	X	-
Canarygrass, Reed	*Phalaris arundinacea*	P1R	X	-	X	X	X	X	X
Deertongue	*Panicum clandestinum*	P1R	-	X	X	X	X	X	X
Fescue, Creeping red	*Festuca rubra*	P1R	X	-	X	X	X	X	-
Fescue, Tall	*Festuca arundinacea*	P1BR	X	-	-	X	X	X	-
Foxtail, 'Garrison' Creeping	*Alopecurus arundinaceus*	P1R	X	-	-	X X	X	X	X
Lovegrass, Weeping	*Eragrostis curvula*	PsB	-	X	X	X	X	X	-
Redtop	*Agrostis alba*	PsR	X	-	X	X	X	X	X
Ryegrass, Perennial	*Lolium perenne*	PsB	X	-	-	X	X	X	-
Switchgrass	*Panicum virgatum*	P1R	-	X	X	X	X	X	-
Crownvetch	*Coronilla veria*	P1R	X	-	-	X	X	-	-
Flat pea	*Lathyrus sylvestris*	P1R	X	-	X	X	X	X	-
Trefoil, birdsfoot	*Lotus corniculatus*	P1B PsB	X	-	X	X	X	X	-

Growth Habit: P - perennial; l - long lived; s- short lived;
R - rhizamatoms or spreads by rootstocks; B - bunch

TABLE 1 B - Grass and Legume Planting Guide
Tolerance, Use Suitability & Maintenance

COMMON NAME	pH Range	Tolerant To		Traffic Resistant	Use Suitability						Levels of Maintenance Required		
		Flooding	Shade		Critical Areas	Waterways & Channels	Lawns	Playgrounds	Athletic Fields	Beautification	High	Medium	Low
Bluegrass, Canada	4.5-7.5	-	X	X	X	-	-	X	X	-	X	X	-
Bluegrass, Kentucky	5.5-7.0	X	-	X	X	X	X	X	X	-	X	X	-
Bluestem, Big	5.5-7.5	-	-	-	X	-	-	X	-	-	X	X	-
Bluestem, Little	5.5-7.5	-	-	-	X	-	-	-	-	-	-	-	-
Bromegrass, Smooth	5.5-8.0	X	-	-	X	X	-	-	-	-	X	X	-
Canarygrass, Reed	5.0-7.5	X	-	-	X	X	-	-	-	-	X	X	-
Deertongue	3.8-5.0	-	-	-	X	X	-	-	-	-	-	X	X
Fescue, Creeping red	4.5-7.5	X	X	X	X	X	X	X	X	X	X	X	-
Fescue, Tall	5.5-8.0	X	X	X	X	X	X	X	X	X	X	X	-
Foxtail, 'Garrison' Creeping	5.5-7.5	X	-	-	X	X	-	-	-	-	X	X	-
Lovegrass, Weeping	4.5-8.0	-	-	-	X	-	-	-	-	-	-	X	X
Redtop	4.0-7.5	X	-	X	X	X	X	X	X	-	-	X	X
Ryegrass, Perennial	5.5-7.5	-	-	-	X	-	X	X	X	-	-	X	X
Switchgrass	5.7-7.5	X	-	-	X	X	-	-	-	-	-	X	X
Crownvetch	5.5-7.5	-	X	-	X	-	-	-	-	X	-	X	X
Flat pea	5.0-6.0	-	X	-	X	-	-	-	-	X	-	X	X
Trefoil, birdsfoot	5.0-7.5	-	-	-	X	-	-	-	-	X	X	X	-

TABLE 2 - Permanent Soil & Water Conservation Seedings

Kind of Area	SEED MIXTURE: Mowing Desired	SEED MIXTURE: Mowing Not Required
Borrow areas, roadsides, dikes, levees, pond banks and other slopes and banks		
a) Well or excessively drained	1,2,3,4, 5 or 8	5,6,7,8,9, 10,11,12,16 or 22
b) Somewhat poorly drained	2	5 or 6
c) Variable drainage	2	5,6, or 11
Drainage ditch and channel banks		
a) Well or excessively drained	1,2,3, or 4	9,10,11 or 12
b) Somewhat poorly drained	2	
c) Variable drainage	2	
Diversions		
a) Well or excessively drained	2,3, or 4	9,10, or 11
b) Somewhat poorly drained	2	
c) Variable drainage	2	
Effluent Disposal		5 or 6
Gravel pits		4,8,10,13, 14,15, or 16

TABLE 2 - Permanent Soil and Water Conservation Seedings, Cont'd

Kind of Area	SEED MIXTURE: Mowing Desired	SEED MIXTURE: Mowing Not Required
Gullied and eroded areas		3,4,5,8,10, 11, or 12
Minespoil and waste, and other spoil banks (If toxic substances and physical properties are not limiting factors.)		15,16,17, or 18
Shorelines (fluctuating water levels)		5 or 6
Ski slopes		4 or 10
Sod waterways and spillways	1,2,3,4, 6,7, or 8	1,2,3,4,6, 7 or 8
General Recreation Seedings		
a) Picnic and Playgrounds (Not Shaded)	1,2	
b) Driving and Archery Ranges		
c) Camping and Parking (Shaded)	19,20 or 21	

Recommended Varieties

Creeping red fescue (Pennlawn, Wintergreen), Tall fescue (Kentucky 31), Smooth bromegrass (Saratoga, Lincoln), Birdsfoot trefoil (Empire), Switchgrass (Blackwell), Little bluestem (Blaze, Nebraska common), Big bluestem (Kaw, Pawnee), Crownvetch (Chemung, Penngift), American beachgrass (Cape).

TABLE 3 - Seed Mixtures for Permanent Seedings

Mixture		Lbs./Acre	Lbs./1000 Sq. Ft.
1. Kentucky Bluegrass		20	.45
Creeping red fescue		20	.45
Perennial ryegrass		5	.10
	Total	45	1.00
2. Creeping red fescue		20	.45
Redtop		2	.05
Tall fescue *or* Smooth bromegrass		20	.45
	Total	42	.95
3. Creeping red fescue		20	.45
Birdsfoot trefoil 1/		8	.20
Tall fescue *or* Smooth bromegrass		20	.45
	Total	48	1.10
4. Creeping red fescue		20	.45
Redtop		2	.05
Birdsfoot trefoil 1/		8	.20
	Total	30	.70
5. Reed canarygrass		20	.45
Redtop		5	.10
	Total	25	.55

1/Inoculate legume seeds, use four times recommended rate when hydroseeding.

TABLE 3 Continued - Seed Mixtures for Permanent Seedings

Mixture	Lbs./Acre	Lbs./1000 Sq. Ft.
6. Reed canarygrass	15	.35
Garrison creeping foxtail	5 (PLS) 2/	.10
Redtop	5	.10
Birdsfoot trefoil	10	.25
Total	35	.80
7. Smooth bromegrass	15	.35
Switchgrass	10 (PLS) 2/	.25
Perennial ryegrass	5	.10
Birdsfoot trefoil	10	.25
Total	40	.95
8. Switchgrass	10 (PLS) 2/	.25
Weeping lovegrass	3	.07
Little bluestem	10 (PLS) 2/	.25
Total	23	.57
9. Creeping red fescue	10	.25
Crownvetch 1/	15	.35
Tall fescue *or* Smooth bromegrass	15	.35
Total	40	.95
10. Creeping red fescue	20	.45
Redtop	2	.05
Crownvetch 1/	15	.35
Total	37	.85

1/ Inoculate legume seeds, use four times recommended rate when hydroseeding.

2/ (PLS) Pure Live Seed = $\frac{\text{\% Germination X \% Purity}}{100}$

$\frac{\text{100 X Lbs. of 100\% PLS Seed Required}}{\text{Percent PLS of Commercial Seed Lot being used}}$ = Actual Lbs. of Commercial Seed to be used

TABLE 3 Continued - Seed Mixtures for Permanent Seedings

Mixture	Lbs./Acre		Lbs./1000 Sq. Ft.
11. Birdsfoot trefoil	8		.20
Crownvetch 1/	15		.35
Creeping red fescue *or* Tall fescue *or* Smooth bromegrass	20		.45
Total	43		1.00
12. Smooth bromegrass	15		.35
Switchgrass	10	(PLS) 2/	.25
Perennial ryegrass	5		.10
Crownvetch 1/	15		.35
Total	45		1.05
13. Crownvetch 1/	10		.25
Switchgrass	5	(PLS) 2/	.10
Perennial ryegrass	5		.10
Total	20		.45
14. Crownvetch 1/	15		.35
Perennial ryegrass	10		.25
Total	25		.60
15. Switchgrass	5	(PLS) 2/	.10
Bluestem (Big or Little)	5	(PLS) 2/	.10
Perennial ryegrass	5		.10
Birdsfoot trefoil 1/	5		.10
Total	20		.40

1/ Inoculate legume seeds, use four times recommended amount when hydroseeding.

2/ (PLS) Pure Live Seed = $\frac{\text{\% Germination X \% Purity}}{100}$

$\frac{\text{100 X Lbs. of 100\% PLS Seed Required}}{\text{Percent PLS of Commercial Seed Lot being used}}$ = Actual Lbs. of Commercial Seed to be used.

TABLE 3 Continued - Seed Mixtures for Permanent Seedings

Mixture	Lbs./Acre	Lbs./1000 Sq. Ft.
16. Tall fescue	20	.45
Flat pea	40	.90
Total	60	1.35
17. Deertongue	10 (PLS) 2/	.25
Birdsfoot trefoil 1/	8	.20
Perennial ryegrass	3	.07
Total	21	.52
18. Deertongue	10 (PLS) 2/	.25
Crownvetch 1/	15	.35
Perennial ryegrass	3	.07
Total	28	.67
SHADY SITES		
19. Creeping red fescue	40	.90
Canada bluegrass	20	.45
Total	60	1.35
20. Creeping red fescue	60	1.35
21. Creeping red fescue	40	.90
Tall fescue	20	.45
Total	60	1.35
22. Creeping red fescue	15	.35
Flat pea	40	.90
Total	55	1.25
DUNES	Culms/Acre	Culms/1000 Sq. Ft.
23. American beachgrass	58,500	1,345

TABLE 4 - Temporary Soil and Water Conservation Seeding Mixtures

Seed	Lbs./Acre	Lbs./1000 Sq. Ft.
For Spring seedings:		
a) Annual ryegrass	20	.45
b) Spring oats	96 (3 bu.)	2.00
c) Annual ryegrass and Spring oats	15 64 (2 bu.)	.35 1.50
For late Spring and Summer seedings:		
a) Sudangrass	30	.70
b) Annual ryegrass	20	.45
For late Summer and Fall seedings:		
a) Annual ryegrass	20	.45
b) Winter rye	112 (2 bu.)	2.50
c) Winter wheat	120 (2 bu.)	2.75

Table 5 GUIDE TO MULCH MATERIALS, RATES AND USES

Mulch Material	Quality Standards	Application Rates per 1000 sq. ft.	Application Rates per Acre	Depth of Application	1/ Remarks
Sawdust, Green or Composted	Free from objectionable coarse material	83-500 cu. ft.	--	1-7"	Most effective as a mulch around ornamentals, small fruits, and other nursery stock. Special application rates: fruit trees 5-7"; blueberries 6"; vegetables and flowers 2-3"; blackberries and raspberries 4-7"; strawberries 3". Most resistant to wind blowing. Requires 30-35 lbs. N/ton to prevent N deficiency while decaying mulch. 1 cu. ft. weighs 24 lbs.
Wood Chips or Shavings	Green or air-dried. Free from objectionable coarse materials	500-900 lbs.	10-20 tons	2-7"	Has about the same use and application as sawdust, but requires less N/ton (10-12 lbs.) Resistant to wind blowing. Decomposes slowly.
Wood Excelsior	Green or air-dried burred wood fibers .024" x .031" x 4"	90 lbs. (1 bale)	2 tons	--	Effective for erosion control. Tie-down usually not required. Decomposes slowly. Subject to some wind blowing. Packaged in 80-90 lb. bales.
Wood Fiber Cellulose (Partly digested wood fibers)	Dyed green. No growth organism inhibiting factors. Air dried 30% fibers, 3.7 mm or longer.	25-30 lbs.	1000-1500 lbs.	--	When used for erosion control on critical areas double application rate. Apply with hydro-mulcher. No tie-down required. Packaged in 100 lb. bags.

1/ All mulches will provide some degree of 1) erosion control, 2) moisture conservation, 3) weed control, and 4) reduction of soil crusting.

Table 5 Continued — Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	Application Rates per 1000 sq. ft.	Application Rates per Acre	Depth of Application	Remarks 1/
Asphalt Emulsion	SS-1 SS-K SM-K SM-2	14-28 gal.	600-1200 gal.	--	Use as a film on seeded areas without additional mulch. Requires special equipment, to apply. Application rate critical--too much prevents seedings from penetrating and too little prevents erosion control.
Compost or Manure	Well shredded, free from excessive coarse material	400-600 lbs.	8-10 tons	--	Use strawy manure where erosion control is needed. May create problem with weeds. Excellent moisture conserver. Resistant to wind blowing.
Cornstalks, Shredded or Chopped	Air-dried, shredded into 8" to 12" lengths	150-300 lbs.	4-6 tons	--	Effective for erosion control, relatively slow to decompose. Excellent for mulch on crop fields. Has about some value as a cover crop. Resistant to wind blowing.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A	9 cu. yds.	--	3"	Excellent mulch for short slopes and around woody plants and ornamentals. Use 2B where subject to foot traffic. (Approximately 2000 lbs./cu. yd.)
Hay or Straw	Air-dried; free from undesirable seeds & coarse materials	75-100 lbs., 2-3 bales	1.5-2.5 T. 90-120 bales.	Lightly cover 75 to 90% of surface	Use straw where mulch effect is to be maintained for more than 3 months. Subject to wind blowing unless kept moist or tied down. Most common and widely used mulching material. Good for erosion control in critical areas.
Peat Moss	Dried, compressed free from coarse materials.	200-400 cu. ft.	--	2" - 4"	Most effective as a mulch around ornamentals. Subject to wind blowing unless kept wet. Packaged in 100 lb. bales (6 cu. ft.). Excellent moisture holding capacity.

Table 5 Continued

Guide to Mulch Materials, Rates and Uses

Mulch Materials	Quality Standards	Unit Size	Unit and Weight	Area Covered Per Unit	Remarks
Mats and Netting Twisted Kraft Paper Yarn	Plain weave, warp 7 per inch, filling 4 per inch selvage edge with polypropylene filament	45" x 250 yds.	Roll 100 lbs.	312-1/2 sq. yds.	Use to hold seed and aid in germination without mulch. Tie down according to manufacturing specifications.
Twisted Kraft Paper Yarn	Fungicide treated warp 1.1 pairs/in. filling 2.5/in.	45" x 250 yds.	Roll 80 lbs.	312-1/2 sq. yds.	Use over bare soil or sod to prevent erosion and hold seed. Good for waterways, critical slopes, & critical ditch bottoms. Tie down with staples as per manufacturing specifications.
Jute, Twisted Yarn	Undyed, unbleached plain weave. Warp 78 ends/yd. Weft 41 ends/yd.	48" x 50 yds. or 48" x 75 yds.	Roll 60 lbs. 90 lbs.	60 sq. yds. 100 sq. yds.	Use without additional mulch. Tie down as per manufacturing specifications. Effective for erosion control on critical areas.
Excelsior Wood Fiber Mats	Interlocking web of excelsior fibers with a mulch net backing on 1 side only.	36" x 30 yds.	Roll --	16-1/2 sq. yds.	Use without additional mulch. Tie down as per manufacturing specifications.

Table 5 Continued

Guide to Mulch Materials, Rates and Uses

Mulch Materials	Quality Standards	Unit Size	Unit and Weight	Area Covered Per Unit	Remarks
Glass Fiber	1/4" thick, 7/16" dia., holes on 1" centers.	72" x 30 yds.	Roll 56 lbs.	100 sq. yds.	Use without additional mulch. Tie down with T bars as per manufacturing specifications.
Plastic	2-4 mils	Variable up	to 50' wide		Use black for weed control; use white for seeding establishment without organic mulch. Release plastic after seeding is established. Effective moisture conservation and weed control for small fruits.

Table 6 Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
A. Manual 1. Peg and twine	Hay or straw, corn stalks, or pine straw	After mulching, divide area into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to soil surface by stretching twine between pegs in a criss-cross pattern on each block. Secure twine around each peg with 2 or more turns. Drive pegs flush with soil where mowing and maintenance is planned.
2. Mulch netting	Hay or straw, shredded sugar cane or corn stalks, pine straw, compost, wood shavings 'tanbark'	Staple light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations.
3. Soil and stones	Plastic	Plow a single furrow along edge of area to be covered with plastic, fold about 6" of the plastic into the furrow and plow furrow slice back over the plastic. Use stones to hold plastic down in other places as needed.
4. Slit	Hay or straw Corn stalks	Cut mulch into soil surface with a square-edged spade. Make cuts in contour rows spaced 18" apart.
B. Mechanical 1. Asphalt spray	Compost, wood chips, wood shavings, hay or straw, or corn stalks	Apply with suitable spray equipment using the following rates: asphalt emulsion 0.04 gallons per square yard; liquid asphalt (rapid, medium, or slow setting) 0.10 gallons per sq. yd.

Table 6 Continued — Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
2. Pick Chain	Hay or straw, corn stalks, manure, compost, pine straw	Use on slopes steeper than 3:1. Pull across slopes with suitable power equipment.
3. Mulch Anchoring Tool or disk (smooth or notched)	Hay or straw, manure, corn stalks, pine straw	Apply mulch and pull a mulch anchoring tool over mulch. When a disk (smooth) is used, set in the straight position and pull across the slope with suitable power equipment. Mulch material should be "tucked" into the soil surface about 3".
4. Plastic Tacks	Hay or straw	Apply plastic tacks such as Terra Tack, Curasol, etc. according to manufacturer's instructions.

APPENDIX C

TIMBER HARVESTING GUIDELINES FOR NEW YORK
(Reprinted from a pamphlet published by:
The New York Section Society of American
Foresters)

FORESTS ARE RENEWABLE.

Forests supply people with products they need. Forests provide wood, water, paper, wildlife habitat, recreation and much more. Without each, life would change greatly. People would suffer.

Forests are renewable. New crops follow each harvest. But harvesting must be planned properly to give continuing abundance of trees and animals. Soils must be protected to keep lands stable. And streams should remain natural and free flowing.

The New York Section Society of American Foresters recognizes the importance of natural resources and their use to satisfy people's needs. Foresters urge care in logging and continued use of methods that keep forests stable and productive. To help, the New York Section SAF has adopted timber harvesting guidelines for use in New York. The guidelines list ways to prevent problems from building up and for safely harvesting products from the land.

WHAT IS INVOLVED.

Good logging begins with good planning. First, identify potential problems. Work out solutions. Then use suitable methods.

Here are some things to look for and do in logging.

STREAMS AND WATER.

Siltation comes from erosion when soil washes into streams and lakes. That reduces water quality and may harm fish spawning beds. With properly planned logging, erosion never starts. Streams can be protected from careless disturbance and water quality kept natural.

What practices will protect streams, lakes, ponds and marshes and maintain natural water quality?

Recommendation: Keep stream crossings to a minimum and plan them carefully.

--- check with the New York State Department of Environmental Conservation about special regulations that apply to logging along wild, scenic and recreation rivers

ROADSIDES ALONG MAJOR TRAVEL CORRIDORS.

Some people object to logging slash, hung-up trees, poor utilization, deeply rutted roads and landings, and the like. Plan ahead to avoid build-up of these things. Be aware of the landscape. Logging just a little differently usually keeps the roadside area looking good.

What will help to make logging jobs look better along major travel corridors?

Recommendation: Comply with New York's fire laws.

--- keep logging debris off the right-of-way of public roads and back at least 20 feet from the right-of-way (that's required anyway)

--- lop all conifer tops (it's required, too)

--- keep log piles back at least 20 feet from the right-of-way (again, it's in the law)

Recommendation: If logging along major travel corridors isn't screened by a hill, high bank or other topography, maintain a 100-foot wide scenic buffer strip along the roadside.

--- directionally fell trees so the tops land away from the road (that puts the slash further out of sight and reduces needs for top lopping)

--- use all merchantable products in each tree (people don't like to see unused logs and bolts left lying in the woods, and if you cut them out it automatically lops off many of the large branches, too)

--- pull down hung-up or partly fallen trees, fell bent over and broken off trees and use merchantable material in them

--- use care in skidding to protect understory vegetation (shrubs and saplings make a good natural screen)

--- keep skidders back in the woods and off the right-of-way (that keeps the road banks from getting rutted and helps keep skid trails out of sight)

--- cut lightly within 100 feet of the forest edge by keeping at least 50 square feet per acre of basal area in residual trees, including some big ones (that keeps a forest-like appearance along the road)

--- keep in mind that trees standing directly at the edge of the woods provide the best screening

--- keep stumps low

--- check with the New York State Department of Environmental Conservation for advice and approval about crossing classified streams (New York's Water Resources Law requires that anyway)

--- cross streams by the most direct route and avoid crossing at bends and through pools

--- find crossing sites that have low, stable banks, a firm stream bottom, and gentle slopes along the approaches

--- cross at a few carefully chosen places, rather than anyplace that seems convenient

--- use temporary culverts, bridges or runways where stream bottoms or banks would be otherwise damaged, and remove them after use

Recommendation: Protect stream banks by controlling skidding and felling close to the stream.

--- avoid cutting trees growing within 10 feet of the stream bank (that helps keep the banks in place and maintains shade over the water)

--- don't skid up and down the stream channel (and that is a good rule for intermittent streams, too

--- keep skidders back at least 50 feet from the water and winch off any logs that lie closer to the bank (for slopes over 10 percent it is good to keep skidders back at least 100 feet so they don't stir up the soil and start erosion)

--- directionally fell trees so the tops land away from stream (that keeps debris out of the water and keeps the skidders farther away from the banks)

--- remove any logging debris that gets into the water so stream flow isn't affected

--- when clearcutting, leave a 50-foot wide uncut strip along both sides of flowing streams, ponds and marshes (that keeps the water shaded and prevents heating up by direct exposure)

ROADS AND SKIDTRAILS.

Soil uncovered by skidding and truck traffic can erode if water runs over it. Good design and proper maintenance make the best prevention. Poor drainage leads to mud holes. And erosion occurs if water is not diverted off the road surface. The steeper the slope, the greater the danger.

How can erosion be prevented from landings, logging roads, skid trails and off steep slopes?

Recommendation: Plan carefully the protection of slopes exceeding 30 percent.

--- on steep slopes set back roads and trails at least 150 feet from streams, ponds and marshes

--- winch logs off steep slopes where possible and minimize the number of skid trails and the amount of skidder traffic

--- log steep slopes during dry weather when soils are dry, or log when the ground is frozen and snow covered

--- after logging, regrade roads and primary skid trails and install diversion devices as needed

Recommendation: Properly locate, design and build all roads and skid trails.

--- keep roads and skid trails out of wet and poorly drained spots, and off tops and toes of banks and slopes (that should keep machines from getting stuck, too, and make skidding and hauling more economical)

--- Provide ways to divert running water off roads and primary skid trails when slopes exceed 10 percent (figure out where streams of water will run off during a rain or snow melt, and put in diversion devices to channel surface water off the road or trail)

--- keep roads back from streams, ponds and marshes (set them back 100 feet on slopes less than 30 percent, and 150 feet for steeper ones)

--- don't run ditch water directly into a stream (stop roadside ditches before a stream crossing and divert the water into the woods)

Recommendation: Select landing locations that avoid erosion problems.

--- keep landings out of low spots and poorly drained places

--- put landings on gently sloping ground that will give good drainage

--- set back landings at least 200 feet from streams, ponds, lakes and marshes (that will reduce chances of siltation from erosion off the landing)

--- grade and level landings after use and reseed if needed

Recommendation: Wherever possible, keep landings out of sight and dress up landings and access roads after use.

--- put landings behind a hill, bank or land form that hides them from the road, or set landings back into the woods as far as practical (use a set-back of at least 200 feet whenever possible)

--- build access roads somewhat curved (it is harder to see around a curve than up a straight road)

--- lay out landings so the long axis lies perpendicular to the road

--- keep entrances from the road narrow to reduce visibility from the roadside (widen the road once back in the woods but keep the entrance narrow to restrict visibility)

--- clear landings after use by burying debris or dragging waste material back into the forest (actually, if you skid out only usable parts of the tree, there won't be much waste at the landing)

--- back blade landings and access roads so they are smooth and level and free of ruts and mud holes (then they look better and should rapidly seed into new vegetation)

--- put in diversion devices at places where water might run down the roads and wash off soil into roadside ditches

--- regrade and clean ditches along the roadside and close temporary roads

--- where needed, seed access roads, landings, and ditches (especially where they come close to the highway)

--- pick up all oil cans, lunch wrappers, broken cable and other junk

TRY THEM ...THEY WORK.

Good stewardship of natural resources means wise use. Wise use provides a proper inheritance for future generations while caring for our needs today.

The New York Section SAF calls upon landowners, timber harvesting contractors, forest managers and forest industries to harvest carefully. Everyone must work to keep our forest productive through safe and well planned logging. These guidelines list practices that prevent problems.

Use them. They are easy. Do your part. Help in wisely using our forest resources.

APPENDIX D

RARE AND ENDANGERED WILDLIFE
WITHIN THE ADIRONDACK PARK
(As Classified for New York State)

Mammals
Birds
Reptiles &
Amphibians
Fish

ADIRONDACK PARK AGENCY

1977

Rare, endangered, and status-undetermined classifications are defined as follows:[1]

Endangered - An endangered species or subspecies is one whose prospects of survival and reproduction are in immediate jeopardy. Its peril may result from one or many causes -- loss of habitat or change in habitat, overexploitation, predation, competition, disease. An endangered species must have help, or extinction will probably follow.

Rare - A rare species or subspecies is one that, although not presently threatened with extinction, is in such small numbers throughout its range that it may be endangered if its environment deteriorates. Close watch on these species is necessary.

Status Undetermined - A status-undetermined species or subspecies is one that has been suggested as possibly rare or endangered, but about which there is not enough information to determine its status.

MAMMALS

Common Name	Latin Name	Status in N.Y.S.
Cougar	Felix concolor	E*
Lynx	Lynx Canadensis	E*
Pine Marten	Martes americana	R
Gray Fox	Urocyon cinereoargenteus	R
Moose	Alces alces	E*
Southern Bog Lemming	Synaptomys cooperi	R
Long-tailed Shrew	Sorex dispar	R
Water Shrew	Sorex palustris	R
Yellownose Vole	Microtus chrotorrhinus	R

*probably extirpated

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[1]"Rare and Endangered Fish and Wildlife of the United States", Resource Publication 34, Bureau of Sport Fisheries and Wildlife, Washington, D.C., 1968.

BIRDS - BREEDING POPULATIONS

Common Name	Latin Name	Status in N.Y.S.
Common Loon	Gavia immer	R
Ring-necked Duck	Aythya collaris	R
Goldeneye	Bucephala clangula	R
Goshawk	Accipiter gentilis	R
Golden Eagle	Aquila chrysaetos	E
Bald Eagle	Haliaeetus leucocephalus	E
Osprey	Pandion haliaetus	E
Peregrine Falcon	Falco peregrinus	E*
Spruce Grouse	Canachites canadensis	R
Northern Three-toed Woodpecker	Picoides tridactylus	R
Black-backed Three-toed Woodpecker	Picoides arcticus	R
Raven	Corvus corax	E
Rusty Blackbird	Euphagus carolinus	R
Red Crossbill	Loxia curvirostra	R
White-winged Crossbill	Loxia leucoptera	R
Lincoln's Sparrow	Melospiza lincolnii	R
Warblers (many varieties subalpine, boreal zone)		SU

*probably extirpated

REPTILES AND AMPHIBIANS

Common Name	Latin Name	Status in N.Y.S.
Timber Rattlesnake	Crotalus horridus	SU
Mink Frog	Rana septentrionalis	SU

FISH

Round Whitefish	Prosopium cylindraceum	R

APPENDIX E

ECONOMIC IMPACT ANALYSIS

ECONOMIC BENEFITS[1]

1. Primary Benefits - An estimation of primary benefits should be calculated for the public and private sectors of the local/regional economy. Primary benefits to the private sector (households and businesses) may be derived from (1) estimated local labor employment (numbers of employees) and labor payroll, (2) estimated expenditures for locally provided goods and services used in the project, and (3) estimated expenditures spent in the local economy by incoming users of the project.[2] For example, consider a proposed new commercial store or a new residence. The number of carpenters, plumbers, brick masons and other locally hired people - their combined payroll- would be the benefit from the first element. The second component would be the value of lumber and other construction materials used in the project. The final part would be either the expenditures of the store's new customers or the purchases throughout the area by the new residents of the house.

   The other sector in the local economy to receive benefits is the public sector. The public sector is comprised of local governments in the area (county, municipal, school district, special district). Their benefits are the various revenues obtained from the project. Tax payments provided by the project are used by the public sector to purchase goods and services. An example would be that real property taxes, sales taxes and other project tax revenues are used to purchase police and fire protection, public transportation, sewer and water service and others.

2. Secondary Benefits - Secondary benefits are also attributable to both sectors of the local economy. This type of benefit involves the "multiplier effect" that may[3] be localized within a region or project area. It represents the additional dollars generated within a local economy as a result of the initial expenditure.

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[1]Robert G. Craig, Definition and Calculation of Commercial, Industrial, Residential, Recreational or Other Benefits, Adirondack Park Agency, Raybrook, NY, 1976.

[2]Return on capital is another component of primary benefits to the local economy, however, due to our respect for confidentiality, this will be omitted.

[3]Two technical requirements for calculating the "multiplier

The "multiplier effect" indicates how money flows through and out of a local economy. A dollar is spent for local goods or services and the business receiving the dollar in turn pays for its purchases. The new dollar generates a series of transactions or turnovers to satisfy the needs for providing the good or service sold. For example, a dollar is spent within a local community for a pair of socks. Sixty cents of the dollar is called a leakage;[4] that is, a majority of the costs to supply the socks were incurred outside of the local economy. Although 60 cents was a leakage, 40 cents reappears within the local economy and will be spent again. However, when the 40 cents is returned for a second turnover, leakages[5] continue to occur in this example resulting in say, 25 cents leaving the local economy and 15 cents remaining. This process continues until the effects or the original and subsequent rounds can no longer be felt in the local area.

The value of the multiplier in this example is determined by adding the initial dollar expenditure with each remaining amount of the subsequent transactions (1.00 + .40 + .15 +...). Although this multiplier is for the retail trade sector of a local economy, other multipliers can be calculated for other economic sectors such as construction, lodging, finance, schools and others. It is also possible to estimate a general multiplier for all of the economic sectors, and this type is commonly used. Often a general multiplier of 2.0 to 2.5 is reasonable for areas within the Adirondack Park.

3. Total Economic Benefits - The total economic benefits of a project involves both primary and secondary benefits. It is easily calculated by multiplying the primary benefits by the secondary benefits multiplier. This product represents not only the initial expenditure of money in a local economy, but also the series of turnovers and resulting leakages that subsequently occur.

   A hypothetical case of the relationship between primary and secondary benefits in a local economy to yield total economic benefits follows. Suppose a project will entail one thousand dollars of labor to construct it; six hundred

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effect" are that some local labor resources must be involuntarily unemployed and businesses must be operating below their maximum capacity.

[4]Leakages represent the extent of the local economy's dependence upon other economies, or conversely, its measure of self-sufficiency.

[5]Saving is also a leakage as this money is withheld from further

dollars to be spent on local materials and supplies; and the incoming users will spend four hundred dollars in the local economy once the project is built and operating. The sum of the private sector's primary benefits will be two-thousand dollars (add the three parts). Next, suppose that this project will contribute three hundred dollars in local taxes for the public sector. Therefore, the total primary benefits going to the local economy are $2300. If each dollar of primary benefits is estimated to generate two dollars of secondary benefits, the general multiplier for the project is two, leading to the total economic benefit (primary times secondary) of four thousand six hundred dollars.

Primary Benefits		x Secondary Benefits	= Total Economic Benefits
		Multiplier 2.0	$4600
Labor	$1000		
Supplies	600		
User Purchases	400		
Local Taxes	300		
Total	$2300		

ECONOMIC COSTS

1. Benefit - Cost Analysis. Directly associated with each type of economic benefit there exists an economic cost. Thus, there are no "free" goods in a world of "scarce" resources. Local and regional Benefit-Cost analyses frequently fail to include all relevant elements of cost, leading to misleading conclusions in the form of benefit-cost ratios. Three types of errors are found: 1) first, direct and indirect out-of-pocket costs are underestimated due to failure to fully identify the project as a behavioral process of interdependent economic entities; 2) secondly, localized economic benefits are frequently experienced at the expense of non-local economic entities, thus "internalizing" benefits and "externalizing" costs which amount to a geographic redistribution of benefits and costs. Both of these first two types of errors may be labelled "specification errors", in that they fail to accurately define true economic relationships in their flows of benefits and costs. Eventually, all costs must be borne, the distribution of the burden of these costs should be recognized at the outset to avoid self deception and future repurcussions of both an economic and political nature.

   A third type of error derives from exclusion of considering alternative uses of the project's scarce resources. Optimum allocation of scarce resources requires that they be allocated to those uses which yield the greatest discounted present value of the total benefits from the use

of those scarce resources. Thus, benefit-cost ratios of two or more alternative uses should be compared as a matter of sound investment management.

DISCOUNTED PRESENT VALUE (DPV)

1. Calculation of DPV. In calculating the estimated monetary values of benefits and costs derived from a project, the Discounted Present Value Method is recommended. This method is designed to estimate the present value of future income and expenditures or benefits and costs. Central to the concept is the recognition that "a dollar tomorrow is worth less than a dollar today" for a variety of reasons (e.g., time preference for current income, risk, inflation). In using the DPV method, the "year" is used as the unit of time and the relevant annual rate of interest (e.g. long-term municipal bond rate, long-term corporate bond rate, internal cost of capital rate) is used as the "discount rate" which is the rate of interest at which future income (or expenditure) flows are "discounted", using a compound interest formula:

$$DPV = \sum_{t=1}^{n} \frac{\$ \text{ Income in Period } t}{(1+i)^t} = \sum_{t=1}^{n} \frac{Yt}{(1+i)^t}$$

where; "t" equals the future year and can take on the numeric values (1, 2, 3, ..., n-1, n), when n is the last year of the time horizon of the project's impact;

"i" equals the discount rate (described above);

"Y" equals the estimated annual flow of income (or expenditures) or benefits (or costs) in year " ".

Similarly, the Net Benefits from a project can be discounted to their present value, using the formula:

$$\text{DPV Net Benefits} = \sum_{t=1}^{n} \frac{(\text{Total Benefits} - \text{Total Costs})t}{(1+i)^t} = \sum_{t=1}^{n} \frac{(\text{Net Benefits})t}{(1+i)^t}$$

ECONOMIC IMPACT ON PROPERTY VALUES[6]

1. Community Interests and Objectives. The impact of development on property values is of interest to communities for one or more of the following reasons:

   a. A reduction in property value resulting from adverse effects of new development is politically undesirable.
   b. A change in the value of the current housing stock and other real property will be reflected in the level of property taxes when property is reassessed. This, in turn, will have an adverse tax burden effect on property owners whose properties are assessed above actual market value, and favor property owners whose properties are assessed below actual market value. The community's fiscal position will also be affected due to changes in property tax revenues and the financial structure of paying for government services.
   c. A general increase in land values means that the public sector must spend more to purchase rights of way, school sites and other facilities. Meanwhile, the private sector will be faced by rising rents and capital gains.

   If a community decides to examine property value changes, the following elements should be incorporated into the analysis:

      i. Impact of new development on land and property values very near the new development and in the community;
      ii. Key factors that caused the observed changes, if any, in property values;
      iii. Economic and social implications of such changes on the community.

2. Estimation of Property Values. A variety of methods exist for estimating the value of properties. The most direct is to use the most recent transaction price as an estimate of "current market value". In the absence of very recent transaction price data, one could adjust the most recent transaction price to reflect current market conditions and alternative land-use patterns, selecting the "most reasonable" estimated value. The "most reasonable" estimated value depends upon the estimated likelihood of a particular transaction price and particular use of the

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[6] Thomas Muller, Economic Impacts of Land Development: Employment, Housing, and Property Values, The Urban Institute, Washington, D.C., 1976

property. Care should be taken to separately estimate the value of the "land component" and "improvement component" of the property under each alternative landuse considered. The "land component" is the land in its natural state, without topographic or geologic modification by man; while the "improvement component" refers to all man-made alterations in the land component and structures thereon. Local property assessors' data, updated to reflect the changes in the quality of the property and currently market price structure can serve as a first approximation in the property value estimation process.

3. Zoning. An increasing number of Adirondack Park communities have some form of land-use zoning based upon the concept of "external diseconomies". This concept means that the value of one parcel of land can be lessened due to spillovers of adverse (undersirable) results (by products) stemming from the use of adjacent or nearby parcels of land. For example, since some land uses would reduce the value of nearby commercial and residential property, exclusion of such activities through zoning will preserve the commercial and residential property values. Since zoning excludes "adverse" types of development from an area, one result of zoning can be higher values for existing property than would be the case if there were no land-use controls.

   The concept of "external diseconomies" and zoning practices can be extended beyond the community or town to encompass rural and wilderness lands. To protect the value of existing or "preferred" land-use patterns, exclusion of adverse or incompatible land-use patterns may be achieved through proper zoning regulations. Thus, zoning regulations are a tool of land-use management.

   In addition to preserving and protecting the value of existing or preferred land-use patterns, zoning may be deliberately fortuitously used to alter the uses and values of parcels of land. A change in zoning from "low-density residential" to "high-density residential" will have the net effect of raising the value of land when the increase in rent income generated by high density residential use more than offsets the loss in land value due to loss in amenities. At some point, however, the value of losses in amenities would conceivably exceed the value of additional rent income.

   Similarly, at some point the value of losses of wilderness would exceed the value of increased rent income in changing from "wilderness" to "rural" land-use zoning. Due to the interdependency among individuals' land-use patterns and

their welfare priorities, social welfare priorities supercede individual welfare priorities in land-use management. In the absence of such interdependency relationships, expressed in terms of "external economies" and "external diseconomies" of land-use, zoning would be achieved by individual land-use decisions regardless of land-use decisions affecting adjacent or nearby parcels.

FISCAL BALANCE[7]

1. Calculation of Net Change in Fiscal Flow. To calculate the net change in fiscal flow, one must compute total expenditures and subtract them from total revenues for each year of the time horizon. The time horizon is defined as the time period which the analysis is taking place (usually greater than 10 years). All of the future revenues and expenditures are discounted back to the present to determine the present value of the project development (see figure). Net surplus or deficit is determined over the long run of the project. The analyst should also specify annual net changes to identify what potential problems, if any, are foreseen.

$$(\text{NET CHANGE})j = \sum_{t=1}^{n} \frac{Rt}{(1+i)t} - \sum_{t=1}^{n} \frac{Et}{(1+i)t}$$

where R = Total Annual Revenues
E = Total Annual Operating and Annualized Capital Expenditures
n = Total years in time horizon
i = Discount Rate
j = Level of government (municipal, school district)

2. Sources of Revenue by Type of Local Government

Town	Village	School District
Real Property Taxes	Real Property Taxes	Real Property Tax
Sales Taxes*	Sales Taxes*	State Education Aid
State Per Capital Aid	State Per Capital Aid	User Charges
Federal Revnue Sharing Aid	Federal Revenue Sharing Aid	Fees & Other Misc. Revenues
Mortgage Taxes	Mortgage Taxes	
Highway Aid	User Charges	
User Charges	Fines & Other Miscellaneous Revenues	
Fines & Other Miscellaneous Revenues		

*An indirect revenue if county shares sales tax monies with its component local governments. Many counties don't share sales tax revenues.

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[7]Robert G. Craig, A General Methodology for Fiscal Impact Analysis

FISCAL CAPACITY[8]

The Local Finance Law specifies certain tax and debt limitations for local governments generally throughout New York State and additional limitations for towns wholly or partly within the Adirondack Park. These limitations are specified either by the State Constitution or by statute and regulate for purposes of sound government administration, and reasonable burdens on real property taxpayers. They control the ability of a local government to tax and incur debt.

1. Definitions for following discussion:

   a. "Indebtedness" shall mean in relation to a town, village, school district or fire district, any indebtedness other than that excluded by law, in ascertaining the power of such taxing jurisdiction contract obligations such as bonds, notes or other evidences of indebtedness.

   b. "Taxation" shall mean total ad valorem real property taxes within each local taxing jurisdiction for all purposes.

   c. "Aggregate taxable assessed valuation" shall mean the assessed value of all real property subject to taxation for any purpose by the town, village, school district, or fire district within which it is situated.

   d. "Full Valuation of Real Property" shall mean the aggregate taxable assessed valuation of real property in a town, village, school district or fire district, divided by the equalization rate for the municipality, school district or fire district which is established by the New York State Board of Equalization and Assessment and County Board of Equalization and Assessment.

2. Debt Limitations (Section 104, Local Finance Law)

   No town, or village, shall contract indebtedness for any purpose or in any manner which, including existing indebtedness, shall exceed an amount equal to the following percentages of the average full valuation of real property of such town or village:

   a. Any town, for town purposes, seven percent; and

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of a Development Project, Adirondack Park Agency, Ray Brook, New York, 1976.

[8]Ibid

b. Any village, for village purposes, seven percent.

A school district, other than a school district in a city, having an aggregate assessed valuation of taxable real property of one hundred thousand dollars or over shall not issue bonds or bond anticipation notes, if the indebtedness of the school district will exceed ten percent of the full valuation of the real property subject to taxation by the school district, unless:

a. The proposition, for the approval of a bond resolution shall have been approved by at least a sixty percent vote of the qualified voters voting at the meeting or election called for such purpose; and

b. The Board of Regents shall consent thereto; and

c. In a school district located wholly or partly in the Adirondack Park which has within its boundaries state lands, the full valuation of which is more than ten percent of the full valuation of the real property subject to taxation by the school district, the state comptroller, on behalf of the state, also shall consent thereto.

No fire district shall contract indebtedness for any purpose which, including existing indebtedness, shall exceed three percent of the full valuation of the taxable real property of such fire district, except that it may contract debt to an amount which, including existing indebtedness, shall not exceed five percent of the full valuation if approved by a two-thirds vote of the qualified voters of the fire district and the state comptroller determines it is in the public interest to exceed the three percent limitation.

3. Additional Debt Limitations (Section 104.10 Local Finance Law)

Any town which is wholly or partly within the Adirondack Park and has within its boundaries state lands assessed at more than ten percent of the total assessed valuation of such town shall not issue its bonds, bond anticipation notes, capital notes or budget notes, if by doing so the amount of its total proposed and outstanding indebtedness shall exceed the sum of three thousand dollars in such towns which have a total assessed valuation of one million dollars or less, or five thousand dollars in such towns which have a total assessed valuation of over one million dollars; provided, however, such obligations may be issued originally by such a town upon the duly verified petition of the owners of at least sixty-five percent of the taxable real property therein, or upon the certificate of the state comptroller consenting to the original issuance of such obligations.

Any fire district which is situated in whole or in part in a town which is wholly or partly within the Adirondack Park and has within the town boundaries state lands assessed at more than ten percent of the total assessed valuation of the town as determined from the assessment rolls of the town, shall not issue obligations unless the state comptroller shall consent thereto.

4. Tax Limitations (Article VIII, NYS Constitution, Section 176.18 Town Law)

The amount to be raised by tax on real estate in any fiscal year, in addition to providing for the interest on and the principal of all indebtedness, shall not exceed an amount equal to the following percentages of the average full valuation of taxable real estate of town, village, central school district or fire district:

a. any town, for town purposes, no tax limit;

b. any village, for village purposes, two percent; and

c. any central school district not within a city; no tax limit, although there is an annual budget meeting to approve overall finances of central school districts including tax rates.

d. any fire district has no tax limit although it does have a spending limit not to exceed two thousand dollars and in districts having a full valuation of real property in excess of one million dollars an additional amount equivalent to one mill for each dollar of full valuation in excess of the first million dollars of full valuation of such taxable real property.

Determination of Level of Taxes and Debt

The State Department of Audit and Control requires local governments to submit summary statements of debt and real property taxes to determine the level relative to various limits. Depending upon the estimated additional taxes that will need to be levied and estimated additional debt incurred, a project would have a severe effect on a local government if it would require the governing body to exceed the statutory limits. This would prevent the addition of other services, facilities, or programs that are needed in the community.

APPENDIX F

LEGAL BASIS FOR "DEVELOPMENT IN THE ADIRONDACK PARK: OBJECTIVES AND GUIDELINES FOR PLANNING AND REVIEW"

The Adirondack Park Land Use and Development Plan was enacted into law by the State Legislature in 1973 as part of the Adirondack Park Agency Act and has been administered since then by the Agency. In addition to density limitations and shoreline protection requirements, the Plan is implemented through a project review and permit system. Under the Adirondack Park Agency Act (Section 809) review and approval of regional projects (those with more than strictly local implications) requires, among others, a finding of no undue adverse impact upon the natural resources of the Park, or the ability of local governments to provide supporting facilities and services, taking into account the economic, social and other benefits which may be derived from the project.

In making its determination as to the impact of the project on the resources of the Park, the law requires the Agency to consider a list of 37 "development considerations" contained in Section 805 of the Adirondack Park Agency Act and to apply them, as pertinent, to the project under review. These development considerations are described and clarified in this document to make them more understandable and useful.

The following sections of the Act, which relate to the Agency's project review responsibilities and serve as a legal basis for this document, are included in this appendix:

1. Section 809, Subdivision 10

   - Findings the Agency must make before approving a project not located in a land use area governed by an Agency approved local land use program.

2. Section 809, Subdivision 9

   - Findings the Agency must make before approving a project located in a land use area governed by an Agency approved local land use program.

3. Section 809, Subdivision 13

   - Gives Agency authority to impose requirements and conditions in granting permits.

4. Section 809, Subdivision 14

   - Gives Agency authority to adopt rules and regulations which would provide further definition

of the development considerations. "Development in the Adirondack Park" is not a part of the official rules and regulations, nor is it proposed to be. It will, however, provide in major measure the basis for the further definition of the development consideration to be incorporated in a forthcoming revision of the rules and regulations.

5. Section 805, Subdivision 4

- Describes and lists the development considerations.

Section 809

10. The Agency shall not approve any project proposed to be located in any land use area not governed by an approved local land use program, or grant a permit therefor, unless it first determines that such project meets the following criteria:

a. The project would be consistent with the land use and development plan.

b. The project would be compatible with the character description and purposes, policies and objectives of the land use area wherein it is proposed to be located. If the project is on the classification of compatible uses list for the land use area involved, there shall be a presumption of compatibility with the character description, purposes, policies and objectives of such land use area. If the project is a Class B regional project because, as provided in section eight hundred ten, it is not listed as either a primary use or a secondary use on the classification of compatible uses list for the land use area wherein it is proposed to be located, there shall be a presumption that such project would not be compatible with the character description, purposes, policies and objectives of such land use area and the burden shall be on the project sponsor to demonstrate such compatibility to the satisfaction of the agency.

c. The project would be consistent with the overall intensity guideline for the land use area involved. A landowner shall not be allowed to construct, either directly or as a result of a proposed subdivision, more principal buildings on the land included within the project than the overall intensity guideline for the given

land use area in which the project is located. In determining the land area upon which the intensity guideline is calculated and which is included within a project, the landowner shall only include land under his ownership and may include all adjacent land which he owns within that land use area irrespective of such dividing line as lot line, roads, rights of way, or streams and, in the absence of local land use programs governing the intensity of land use and development, irrespective of local government boundaries. Principal buildings in existence within the area included within a project, as such area is defined by the landowner, shall be counted in applying the intensity guidelines. As between two or more separate landowners in a given land use area the principal buildings on one landowner's property shall not be counted in applying the intensity guidelines to another landowner's project. The area upon which the intensity guideline is calculated shall not include (a) bodies of water, such as lakes and ponds, (b) any land in the same ownership that is directly related to any principal building in existence on August first, nineteen hundred seventy-three, which land is not included in the project, and (c) in the case of any principal building constructed after August first, nineteen hundred seventy-three, any land in the same or any other ownership that was included within the area of any previous project in order to comply with the overall intensity guideline.

d. The project would comply with the shoreline restrictions if applicable. The agency may require a greater setback of any on-site sewage drainage field or seepage pit than required under the shoreline restrictions if it determines that soils or other pertinent conditions require such greater setback to reasonably protect the water quality of the water body involved.

e. The project would not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the park or upon the ability of the public to provide supporting facilities and services made necessary by the project, taking

into account the commercial, industrial, residential, recreational or other benefits that might be derived from the project. In making this determination, as to the impact of the project upon such resources of the park, the agency shall consider those factors contained in the development considerations of the plan which are pertinent to the project under review.

9. The agency shall not approve any Class A regional project proposed to be located in a land use area governed by an approved local land use program, or grant a permit therefor, unless it first determines that such project meets all of the pertinent requirements and conditions of such approved local land use program and that the project would not have an undue adverse impact upon the natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources of the park or upon the ability of the public to provide supporting facilities and services made necessary by the project, taking into account the commercial, industrial, residential, recreational or other benefits that might be derived from the project. In making this determination, as to the impact of the project upon such resources of the park, the agency shall consider those pertinent factors contained in the development considerations and provided for in such approved local land use program. The agency shall, in connection with its review of a project under this subdivision, make provision in its rules and regulations adopted under subdivision fourteen for the early involvement of the local government wherein such project is proposed to be located in the review of such project on an informal basis. Such local government shall have standing as a party in any public hearing on such project held by the Agency.

13. The Agency shall have authority to impose such requirements and conditions with its granting of a permit as are allowable within the proper exercise of the police power. The agency shall have specific authority in connection with its project review jurisdiction: (a) To impose reasonable conditions and requirements

including the posting of performance bonds in favor of the local government as obligee, to ensure that any project for which a permit is granted will be adequately supported by basic services and improvements made necessary by the project. The cost of any such services or improvements may be imposed by requiring that the project sponsor provide the service or improvement or reserve land, or any interest therein, or contribute money in lieu thereof to the local government wherein the project is proposed to be located if such local government consents thereto. In this exercise of the authority contained in this provision, the agency shall consult with the affected municipalities and give due consideration to their views.

14. The agency may, after public hearing, adopt, and have authority to amend or repeal, rules and regulations, consistent with the provisions of this section, to govern its project review procedures and to provide further guidance to potential project sponsors through further definition of the development considerations as they would apply to specific classes of projects in specific physical and biological conditions....

Section 805

4. Development considerations. The following are those factors which relate to potential for adverse impact upon the park's natural, scenic, aesthetic, ecological, wildlife, historic, recreational or open space resources and which shall be considered, as provided in this article, before any significant new land use or development or subdivision of land is undertaken in the park. Any burden on the public in providing facilities and services made necessary by such land use and development or subdivision of land shall also be taken into account, as well as any commercial, industrial, residential, recreational or other benefits which might be derived therefrom.

a. Natural Resource considerations

(1) Water

(a) Existing water quality
(b) Natural sedimentation of siltation

(c) Eutrophication
(d) Existing drainage and runoff patterns
(e) Existing flow characteristics
(f) Existing water table and rates of recharge.

(2) Land

(a) Existing topography
(b) Erosion and slippage
(c) Floodplain and flood hazard
(d) Mineral resources
(e) Viable agricultural soils
(f) Forest resources
(g) Open space resources
(h) Vegetative cover
(i) The quality and availability of land for outdoor recreational purposes.

(3) Air

(a) Air quality

(4) Noise

(a) Noise levels.

(5) Critical resourse areas

(a) Rivers and corridors of rivers designated to be studied as wild, scenic or recreational in accordance with the environmental conservation law.
(b) Rare plant communities
(c) Habitats of rare and endangered species and key wildlife habitats
(d) Alpine and subalpine life zones
(e) Wetlands
(f) Elevations of twenty-five hundred feet or more
(g) Unique features, including gorges, waterfalls, and geologic formations.

(6) Wildlife

(a) Fish and wildlife

(7) Aesthetics

(a) Scenic vistas
(b) Natural and man-made travel corridors

b. Historic site considerations

(1) Historic factors

(a) Historic sites or structures

c. Site development considerations

(1) Natural site factors

(a) Geology
(b) Slopes
(c) Soil characteristics
(d) Depth to ground water and other hydrological factors.

(2) Other site factors

(a) Adjoining and nearby land uses
(b) Adequacy of site facilities

d. Governmental considerations

(1) Governmental service and finance factors

(a) Ability of government to provide facilities and services.
(b) Municipal, school or special district taxes or special district user charges.

e. Governmental review considerations

(1) Governmental control factors

(a) Conformance with other governmental controls

Adirondack Park Agency

SOILS HANDBOOK

August 1990

APPENDIX G

TABLE OF CONTENTS

Introduction 1

Soil Scientist 2

Adirondacks Soil 3

Physical Properties of Soils 4

Soil Investigations 6

Soil Test Pits 7

Soil Percolation Rate Test 9

Soil and Site Verifications 11

Soil Mapping 12

- High Intensity Soil Map - Class A 14
- High Intensity Soil Map - Class B 19
- Medium Intensity Soil Maps 21
- Resource Soil Maps 23
- Meso Soil Maps 24

Appendices

- USDA-SCS Soil Mapping ..... A
- Soil Drainage Classes ..... B
- Hydric Soils C
- Soil Test Pit Description Form ..... D
- Glossary ..... E
- References ..... F

INTRODUCTION

Soils information provides essential natural resources information for site assessment and development. The purpose of this handbook is to provide sources of available soils information and to standardize the evaluation and mapping of the soil resource for activities that require a permit from the Adirondack Park Agency. This soil information will be used to evaluate a site for a proposed use. The intent is to ensure that the proposed use will not exceed the potential of the site and the soil resource.

Soil is the mineral and organic portion of the earth's surface, altered by weathering and biological activity which is capable of supporting plants out-of-doors. Its upper limit is air or shallow water. At its margins it grades to deep water or to barren areas of rock or ice. The lower limit of the soil grades to hard rock or to earthy materials virtually devoid of roots, animals, or marks of other biologic activity. In its natural, undisturbed state, the soil is covered by vegetation which protects it from eroding forces of wind and water.

Soils are differentiated by several genetic and morphologic characteristics: parent material; mineralogy; structure; permeability; consistence; color; organic matter content; depth to bedrock; and depth to water table. These factors combine to form unique soil types. Over 150 different soil series are recognized in the Adirondack Park by the U.S.D.A. Soil Conservation Service. These soils differ in their ability to treat wastewater, support buildings, grow crops, move water and erode.

The knowledge of the type of soils allows for better site planning and for proper structural design to match the potentials and limitations of the site. For example, the bearing capacity of a soil can vary widely. It affects how structures are build on, or anchored to the soil. Likewise, water movement on a site is affected by the type of soil. The infiltration rate, permeability and restrictive layers affect whether water flow will occur primarily through the ground or overland. This determines the ability of a soil to either treat or contain waste products, and to control storm water runoff.

The Soils Handbook is a compilation of informational sources. The sources have been modified to reflect the soils of the Adirondacks and to comply with the rules, regulations and guidelines of the Adirondack Park Agency. Much of the material presented in this document is based on technical information available from the U.S.D.A. Soil Conservation Service and the National Cooperative Soil Survey.

SOIL SCIENTIST

A soil scientist is a professional with expertise in characterizing the soil resource based on academic training and field experience. Soils information provided by qualified soil scientists is acceptable as documentation on matters jurisdictional by the Adirondack Park Agency. Soil scientists are defined by the New York State Department of Agriculture and Markets Rules and Regulations (1 NYCRR 370.2 [v]) as follows:

> Soil scientist means a person having special knowledge of the physical, chemical and biological sciences applicable to the genesis and morphology of soils as natural bodies and of the methods to describe, classify and map soil units. This person must possess a minimum of two years experience in classifying and mapping soils and at least a bachelors degree, with 30 semester hours or equivalent in biology, physical science and earth science with a minimum of 15 semester hours in soil science. Individuals who do not meet the above minimum qualifications but who possess at least 10 years experience mapping soils are qualified if they have completed at least 10 semester hours in soil science.

A list of qualified soil scientists available to work in the Adirondack Park who meet the Department of Agriculture and Markets definition can be provided upon request to the Adirondack Park Agency.

ADIRONDACK SOILS

Soil formation in the Adirondack region has occurred in a geologically short period of time. The oldest deposits date back to the recession of the glacial ice from the region; from 14,000 years ago along Lake Champlain to only 9000 years ago in the high mountain valleys. During deglaciation, the melting of the continental glacier ice caused the glacial debris to be washed and blown across the landscape by the erosive forces of water and wind. As the glaciers melted, the landscape was exposed and a barren tundra environment prevailed. With time and the cold ice mass gone, regional temperatures warmed and vegetation became established. This vegetation served to stabilize the glacial debris and to allow the earthen material to develop into the soils that currently exist. Adirondack soils owe their properties to their parent material, topographic position, vegetation, and the climate conditions of this region that have occurred since the time of deposition.

Examination of a soil in cross-section, as one would view the soil profile in an excavation, reveals that the soil is composed of earthen and organic layers. Layers similar in physical and chemical properties are termed soil horizons and tend to be parallel to the ground surface. A soil with a normal sequence of soil horizons which has developed from the natural soil forming processes and has not been excavated, graded or filled, is termed a native soil. Agricultural soils that have the surface soil horizons mixed by plowing ("Ap" horizon), are considered as native soils if the lower soil horizons are intact. When the vegetation and organic mat has been removed through human activities, and the mineral soil is exposed, the area is considered a disturbed soil.

In the Adirondack Park, the soil is normally covered by vegetation. The soil has a layer of leaves, needles, twigs and other plant and animal residue covering the surface. This organic debris, known as the forest floor or organic mat, accumulates with every season. As decomposition slowly occurs in this layer, nutrients are recycled back to the growing plants. Together, the organic mat and vegetation blanket the soil, providing protection from the erosive forces of water, wind and human activities. Below the organic layer is the earthen material deposited by the actions of glaciers, water or wind. This is the mineral soil. It provides plants with solid anchorage for their roots, water and a source of nutrients.

PHYSICAL PROPERTIES OF SOILS

The physical properties of a soil determine its inherent ability to withstand a particular use. Many of the physical properties of a soil are a function of the parent material of the soil. The parent material refers to the type of material and the method of deposition from which the soil was derived. Soil parent materials common in the Adirondacks are: glacial till (basal and ablation till); glacial outwash; lacustrine; alluvial; and organic. The parent material is also indicative of the type of mineralogy inherent in a deposit from which a soil developed. The predominant mineralogy of Adirondack soils is the crystalline bedrock underlying the Adirondack mountain region. Only in the northeastern foothills, or in a scattering of localities within the Park, is the soil parent material derived from calcareous limestone bedrock.

The water regime of a soil is dependent on landscape position and other physical soil properties. Areas with a small watershed, such as on a ridge-top or knoll, tend to be dryer than areas with a large watershed that collect more water. The permeability of a soil is the ability of a soil to transmit water. In general, sandy soils with a rapid permeability and occupying landscape positions well above the natural watertable, drain water away quickly and tend to be dryer. Clayey soils with a slow permeability drain water slower and tend to be wetter.

The seasonal high groundwater table (SHGWT) is the zone of saturation in the soil at the highest average depth during the wettest season. This typically occurs in spring in the Adirondacks. The depth measured from the soil surface to the top of the water table is used to assess the suitability of a soil for many uses. Water which seeps into a test pit only indicates the current status of the water table and is not a reliable method for predicting the actual depth to the seasonal high groundwater table.

The location of the water table within a soil can be determined by mottles. Mottling refers to spots of contrasting colors in a soil horizon, with both high chroma and low chroma represented in the variegated colors. Soil scientist use mottling to determine the depth at which the soil is saturated with water at some period of the year (unless, the soil is artificially drained). It is also implicit in the meaning that the temperature of the horizon is above the biological zero (5°C) during at least part of the time when the horizon is saturated.

Soil drainage classes are used to group soils by their depths to the seasonal high groundwater table. Soil drainage classes are: excessively drained; well drained; moderately well drained; somewhat poorly drained; poorly drained; and very poorly drained. Definitions and field criteria for determining soil drainage classes are listed in Appendix B.

A hydric soil is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil. The Federal Interagency Committee for Wetland Delineation composed of the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, and U.S.D.A. Soil Conservation Service, uses the term "hydric soil" to define a wetland soil. The Adirondack Park Agency Rules and Regulations implementing the New York State Freshwater Wetlands Act and the Adirondack Park Agency Act rely primarily on hydrophytic vegetation to determine the extent of wetlands with supporting evidence from soils and hydrology. Specific taxonomic and field criteria for determining hydric soils are listed in Appendix C.

Soils with layers of contrasting physical properties can drastically affect land uses. Restrictive soil layers are dense or more compact layers in which water movement and root growth through the soil is hindered. They are commonly called a hardpan. Restrictive layers are found in soils formed in glacial lodgement till (basal till), or are caused by less permeable silty and clayey layers underlying more permeable soil layers. Layers cemented with silica, iron or other compounds may also be restrictive to water movement. Perched water tables are caused by a restrictive soil layer. In this situation, water flow moves vertically through the soil until it reaches the restrictive layer. Then it moves laterally down slope over the top of the layer. Restrictive soil layers are a feature of basal till soils which comprise over 60 percent of the soils in the Adirondack Park. In general, a 25 percent slower percolation rate in an underlying soil is sufficient to constitute a restrictive soil layer.

Soils with rapid percolation rates represent a condition of an extreme physical soil property. Fast percolating soils have percolation rates less than three minutes per inch and require special attention to ensure adequate treatment of wastewater.

Soil slope is the deviation of the native soil surface from the horizontal. For soil mapping, the slope is measured as the ratio of maximum vertical rise or fall of the land in 100 feet of horizon distance and is expressed a percentage. The soil slope measurement to determine suitability of a site for an on-site sewage disposal system uses the maximum vertical rise or fall of the land in 50 feet of horizon distance. Slopes are considered graded when the native slope has been changed by man. Slopes for finished grades are generally expressed as a ratio of distance in units of horizontal run to one unit of rise. For example, a 3:1 graded slope will be a slope that changes one foot in the vertical for every three feet of horizonal run.

SOIL INVESTIGATIONS

A soil investigation refers to a site specific inventory and evaluation of the soil resource by a qualified soil scientist. All soil investigation information provided to the APA must include the name and qualifications of the soil scientist who conducted the investigation and the date field work was performed. Soil scientists must use current National Cooperative Soil Survey methods and standards for describing and mapping soils as published in the National Soils Handbook, USDA-SCS, 1983, and the Soil Survey Manual, USDA-SCS, 1984.

Types of soil investigations typically required by the Adirondack Park Agency to evaluate the suitability of a proposed development activity are:

Soil Test Pits
Soil Percolation Rate Test
Soil and Site Verification
Soil Mapping

Soil test pits and soil percolation rate tests are used to evaluate a specific spot, whereas, soil mapping is use to evaluate more extensive areas. Verification of a soil or site is used to confirm the suitability of an area for the proposed development. Soil investigations required by the Adirondack Park Agency will be performed in accordance with the requirements and standards specified on the following pages.

SOIL TEST PITS

Soil test pits are excavations into the soil at locations of specific interest. These would include the proposed siting of a building or an on-site sewage disposal system or an area where a limiting soil condition is suspected, such as shallow depth of soil over bedrock or high water table. The depth to which a soil should be examined will depend on the intended use of the site. Soils used for on-site sewage disposal systems should be examined to a depth at least four feet below the proposed leaching facility. For a wetland determination, the soil may be examined only to the depth necessary to determine whether the soil is hydric. Deep test pit should be excavated such that one side forms a ramp to allow easy access and exit. National Institute for Occupational Safety and Health (NIOSH) and Occupational Safety and Health Administration (OSHA) safety regulations should be followed to prevent injury while performing a soil test pit investigation.

Examination of a soil test pit provides information relative to the nature of the parent material, soil genesis, soil horizons, texture, erodibility, stability, mottles and depth to water table, and restrictive or fast percolation layers. The duration and movement of the water table in the soil, the ability of a soil to treat wastewater or to contain stormwater can also be assessed.

Soil test pits are required to ensure the suitability of a site for land uses in accordance with the soil and site requirements of New York State Department of Health, Department of Environmental Conservation and the Adirondack Park Agency. In choosing a location for a test pit, it is important that the site is representative of the area in which the proposed land use will occur. The number of soil test pits required and the size of the area that each test pit represents will depend on the variability of the soil. Soil test pits are required for land uses such as on-site sewage disposal systems, land fills, pesticide applications, land reclamation and wetland determination. Soil test pits are also used to investigate areas which show evidence of potential soil features such as, shallow depth to bedrock, water table or a gravel deposit.

Requirements for Soil Test Pits:
Soil test pit descriptions will be representative of the area and will describe the soil to a depth of seven feet or four feet below the proposed structure, whichever is deeper. The qualified soil scientist will describe the soil test pit using current U.S.D.A. Soil Conservation Service methods and standards. All test pits examined will be located on a basemap. The date and weather conditions when the soil test pit was examined and the name of the qualified soil scientist who described the soil will be noted on the soil test pit description. The soil will be examined to determine the following characteristics:

1. Soil parent material

2. Soil horizon designation

3. Soil morphological characteristics for each soil horizon including:
   - Depth
   - Color (by Munsell Soil Color Charts)
   - Texture
   - Structure
   - Consistence
   - Percent rock fragments
   - Mottles

4. Soil depth, as measured from the top of the mineral soil surface to each of the following:
   - Mottling - state color, abundance, size and contrast
   - Seasonal high groundwater table
   - Bedrock (if featured in test pit)
   - Restrictive soil layers
   - Rapid percolation horizons (fast perc soils)
   - Groundwater entering the test pit
   - Rooting depth

5. Surface features
   - Slope
   - Stoniness and boulderiness
   - Rockiness
   - Topography
   - Vegetation

6. Occurrence of flooding

A sample APA Soil Test Pit Description form is provided in Appendix D.

SOIL PERCOLATION RATE TEST

The soil percolation rate test indicates the rate which water moves through the soil for determination of on-site sewage disposal application rates. Percolation rate test results and the estimated sewage flow rate are used to determine the required size of an on-site sewage disposal system. The soil percolation rate test is not a test for the hydraulic conductivity of the soil which would be used for sizing structures such as stormwater infiltration devices.

Requirements for Soil Percolation Rate Test:
The test is to be performed in accordance with state guidelines listed below and may additionally require the certification of a professional engineer:

1. The test may only be conducted when the temperature is above 25°F and when the soil is not frozen at the depth the test is being conducted. Soil percolation tests are to be conducted at a 30 to 36 inch depth below the soil surface. Soils with a restrictive or fast percolating layer within four feet of the bottom of the proposed sewage disposal systems require a second test performed in the contrasting soil material. Percolation tests should be performed at a minimum of two locations within the area of an on-site sewage disposal system.

2. The percolation test hole should be dug approximately 12 inches in diameter and to a depth described above. In order to facilitate the running of the test and prevent cave-in, a larger excavation should be made for the upper portion of the hole with the actual percolation test hole in the bottom. It is necessary to place small stones in the bottom of the test hole to reduce the scouring and silting action when water is poured into the hole. The sides of the test hole should be scraped to eliminate smearing that may clog soil pores.

3. Presoaking: The hole should be carefully filled with at least 12 inches of clear water. This depth of water should be maintained for at least 4 hours and preferably overnight if clay soils are present. A funnel with an attached hose or similar device may be used to prevent water from washing down the sides of the hole. Automatic siphons or float valves may be employed to automatically maintain the water level during the soaking period. It is extremely important that the soil be allowed to soak for a sufficiently long period of time to allow the soil to swell if accurate results are to be obtained.

   In sandy soils with little or no clay, soaking is not necessary. If, after filling the hole twice with water, the water seeps completely

away in less than ten minutes, the test can proceed immediately.

4. Clean water should be poured into the hole, with as little splashing as possible, to a depth of six inches.

5. The time, in minutes, required for the water to drop from six inches to five inches should be observed and recorded.

6. Repeat the test a minimum of three times until the time for the water to drop one inch for two successive tests gives approximately equal results. Report these data. The last test will then be taken as the stabilized percolation rate. The time recorded for this test will be the design basis for determining the square footage of the on-site sewage disposal system. If different results are obtained from separate test pits in the same general area, the slowest percolation rate is used in the design.

SOIL and SITE VERIFICATION

Verification of soil and site conditions can include a variety of on-site investigations. Soil test pits are typically used as part of the verification process. The verification can be used to check existing soils information or to ensure a proposed use meets all the necessary setback and soil requirements. These examinations include:

1. Verifying adequate area is available for an on-site sewage disposal systems and replacement system.

2. Ensuring all setback distances (for property boundaries, wells, surface waters, wetlands, right of ways, steep slopes, limiting soil features and others) can be satisfied for a proposed lot or use.

3. Verifying existing soil mapping or other soils information is accurate.

SOIL MAPPING

A soils map shows the distribution of soil types or other soil mapping units in relation to prominent physical and cultural features of the earth's surface. Soil maps are produced at many different scales and intensities depending on the intended use of the map. The Adirondack Park Agency recognizes five types of soil maps used in the Adirondack Park: High Intensity Soil (HIS) map - Class A; High Intensity Soil Maps - Class B; Medium Intensity (Detailed); Resource; and Meso Soil Maps. These five types of soil maps show differing levels of detail and have different accuracy requirements. The use of soil mapping to evaluate a site for a particular use must be in accordance with the accuracy of that type of soil map. Table 1 shows comparisons of the different type of soil maps.

Table 1. Types of Soil Mapping

Type of Soil Map	Scale of Mapping	Minimum Map Unit Size	Soil Mapper	Accuracy of soil line (feet)	Acres/day Mapped
HIS Map Class A	1:1200	2,000 sq.ft	Consultant	20	10-15
HIS Map Class B	1:4800	10,000 sq.ft	Consultant	50	45-60
Medium Intensity, Detailed, or Order 2	1:15,840 to 1:24,000	5-10 acres	USDA-SCS	100*	200-300
Resource or Order 3	1:62,500 or 1:24,000	35-45 ac.	USDA-SCS	250*	500-750
Meso	1:62,500	200-500 ac.	USDA-SCS	1000*	5000-10,000

* approximate accuracy

The Soil Conservation Service has completed Resource and Detailed soil surveys for most areas in the Park. These maps are available from the county SCS Offices (see Appendix A). Meso soil maps produced by the SCS are available for the entire Park; however, they generally do not contain enough detailed to provide site specific information appropriate for project design and review.

General Requirements for Soil Maps

Soil mapping required by the Adirondack Park Agency shall be mapped by either the U.S.D.A. Soil Conservation Service (SCS) or by a qualified soil scientist as defined by New York State Department of Agriculture and Markets Rules and Regulations (1 NYCRR 370.2 [v]).

Soil maps produced by the U.S.D.A. Soil Conservation Service and submitted to the Adirondack Park Agency shall include the source of the mapping, the original map scale and the soil mapping legend.

Soil maps produced by soil scientist consultants for submission to the Adirondack Park Agency must be mapped according to the requirements set forth in this document. The soil map criteria required for each type of soil map are as follows:

1. Type of a base map.
2. Soil legend.
3. Map unit purity.
4. Minimum size delineation.
5. Accuracy of soil boundary line placement.
6. Delineation of drainage features.

These criteria are described in detail for each type of soil map in the following sections of this document. It should be noted that: These represent minimum standards for each type of soil mapping. In addition, all soil maps produced by soil scientist consultants shall, as part of the map, include the specifics for these criteria, the name of the qualified soil scientist who prepared the map and the dates the field work was accomplished. Soil mapping may only be performed only when there is no snow on the ground.

Whenever soil survey maps are transferred onto a different basemap for submission to the Adirondack Park Agency, these maps must reference the source of the soil mapping and include the type of map (intensity) and the scale at which the map was originally delineated.

TYPES OF SOIL MAPS

1. HIGH INTENSITY SOIL MAPS - CLASS A

The Class A - High Intensity Soil (HIS) Maps are a site specific soil investigation. These maps provide valuable information to evaluate the site where: development is planned in areas adjacent to a waterbody or critical resource; the average lot size in a proposed subdivision is less than ten acres; multi-unit dwellings are planned; the soil limitations might prohibit a particular use.

The Class A - HIS map uses a connotative soil mapping legend of soil properties as the basis for mapping. These soil properties are essential parameters in the APA review process. HIS maps are not available from the U.S.D.A. Soil Conservation Service. They must be mapped by a qualified soil scientist. The mapping rate is approximately 10 to 15 acres per day.

The Class A - HIS maps will be conducted in accordance with the following standards. These standards are amended from High Intensity Soil Maps for New Hampshire - Standards and Origin, Society of Soil Scientists of Northern New England, to reflect the requirements of the Adirondack Park Agency.

Criteria for High Intensity Soil Mapping - Class A:

Base Map

The base map for the Class A - HIS map shall consist of:

1. A current perimeter survey by a licensed land surveyor.
2. Map scale of 1" = 100' (1:1200) or larger, i.e., 1" = 50'.
3. Topography with 2' contour intervals or less.
4. Ground control is required and shall be at the density specified by the soil scientist. The following guidelines are recommended:
   a. Four identified points or features per acre.
   b. The points uniformly distributed throughout the parcel.
   c. Points or features will be shown on base map.

Soil Mapping Legend

This key is used in determining soil mapping units utilized in High Intensity Soil maps. Soil mapping units are map delineations composed of soils that have similar characteristics. They are designated by a five part symbol which includes the depth to seasonal high groundwater table, parent materials, restrictive features, and slope. Only one soil type is allowed per map unit delineation.

1st SYMBOL: Depth to Seasonal High Groundwater Table

Soils that meet the criteria for the hydric soil technical definition #4 in Appendix C, concerning frequently flooded soils, will have a 1st Symbol consisting of two parts. The first letter corresponds to the actual depth to the seasonal high groundwater table and is followed by a "/E". The "/E" denotes a hydric soil condition (see examples of HIS mapping units).

A - greater than 48 inches
B - 24 to 48 inches
C - 12 to 24 inches and non hydric soils
D - less than 12 inches and non hydric soils
E - Hydric soils, see definition in Appendix C
F - not determinable (to be used only with 2nd Symbol 6)

2nd SYMBOL: Parent Material

0 - Bedrock -- less than 6 inches of mineral soil
1 - Glaciofluvial deposits (outwash or terraces)
2 - Glacial till material
3 - Very fine sand and silt deposits
4 - Loamy or sandy overlying silt or clay deposits
5 - Silt and clay deposits
6 - Excavated, regraded or filled
    The composition of the areas mapped with this symbol must be identified within the map unit or the map unit legend (i.e., fill, excavated or regraded).
7 - Alluvial deposits
8 - Organic materials

3rd SYMBOL: Restrictive Feature

If more than one applies, list the most restrictive:

N - None
B - Extremely Bouldery, with more than 15% of the surface covered with boulders (larger than 24" in diameter)
F - Subject to flooding

L - Bedrock present in the soil profile 0 to 24 inches below the soil surface (bedrock is either lithic or para-lithic contact).
M - Bedrock present in the soil profile 24 to 48 inches below the soil surface (bedrock is either lithic or para-lithic contact).
X - Areas where depth to bedrock is so variable that a 3rd Symbol of L or M cannot be effectively delineated.
P - A Fast Percolation layer is present in the soil profile at 12 to 48 inches below the soil surface. A fast percolation layer has a percolation rate of 0 to 3 minutes per inch.
R - Restrictive soil layer(s) are present in the soil profile at 48 or less inches below the soil surface. Examples of restrictive layers include but are not limited to: basal till; hard pan; platey structure; clayey texture.
Z - Does not meet the definition of Fill Materials (only to be used with 2nd Symbol of 6).

Fill Materials are defined as soil materials that:

a). contain less than 15% organic matter and non-soil materials by volume.
b). contain not more than 25% by volume, cobbles (6" diameter) and stones (larger than 12" in diameter).
c). contain not more than 27% by weight, clay size (0.002 mm and smaller) particles.
d). shall be essentially homogeneous. If bedding planes and other discontinuities are present, detailed analysis is necessary.

Material consisting of organic materials or non-soil materials such as tree stumps, sawdust, wood chips and bark, bricks, asphalt, concrete, metal, wallboard, etc., even with a soil matrix, is not considered to be fill material.

4th SYMBOL: Slope Class

B - 0 to 8%
C - 8 to 15%
D - 15% to 25%
E - 25%+

5th SYMBOL:

A - Class A - High Intensity Soil Map identifier.

The "A" is used as the 5th Symbol to identify the area mapped as meeting the standards for a Class A - High Intensity Soil Map. The letter "B" is used as the 5th Symbol to identify the area mapped as meeting the standards for a Class B - High Intensity Soil Map.

Map Unit Purity

The soil within an area enclosed by a soil boundary line (a map unit delineation) will have a minimum of 75% of the soil properties inferred by the soil map symbol placed within that map unit delineation. Inclusions of limiting soils can comprise up to a maximum of 15 percent of the map unit delineation. The control section for determining soil properties is from the mineral soil surface to a depth of 48 inches.

Minimum Size Delineation

The Class A - High Intensity Soil maps will delineate mapping units to a minimum size of 2,000 square feet. Smaller areas of contrasting soils should be shown with the use of spot symbols.

Accuracy of Soil Boundary Line Placement

Soil boundary line placement should be accurate within 20 feet for those soil features occurring within 24 inches of the surface and 40 feet for soil features occurring within 48 inches of the surface.

Delineation of Drainage Features

All groundwater seeps, intermittent or permanent drainage channels will be delineated with the same accuracy as was required for the soil boundary lines. The drainage channels will be marked with an arrowhead to indicate the direction of flow as they enter a waterbody or wetland with no defined channel or as they extend past the boundaries of the mapped area.

Examples of Soils Classified Using the HIS Mapping Legend

a. An excessively drained sand and gravel soil with no restrictive features on a 9% slope would be identified as: A1NCA.

b. A glacial till soil with mottling at 34 inches with a dense, water restrictive layer at 38 inches, on a 4% slope, would be identified as: B2RBA.

c. A clayey, non-hydric soil with firm consistence, mottling at 10 inches and high clay content in the substratum, on a 1% slope, would be identified as: D5RBA.

d. A very poorly drained organic soil with the water table at the surface, on a 1% slope would be identified as: E8NBA.

e. An area of well drained glacial till with no indication of a water table, where bedrock is present at 18 inches, and the shallow soils are so intermixed with deep soils that they cannot be separated, on a 16% slope, would be identified as: A2XDA.

f. An area that was filled with stumps and concrete blocks such that the fill material would not meet the Standards for Fill Material, on a 2% slope, and the depth to a seasonal high groundwater table could not be determined, would be identified as: F6ZBA.

g. A flood plain area of alluvial, nearly level soils that frequently floods and has mottling evident at 21 inches, would be identified as C/E7FBA.

2. HIGH INTENSITY SOIL MAPS - CLASS B

The Class B - High Intensity Soil maps provide detailed information to assess an area. The information is not site specific enough to define soil suitability for a proposed development area, but rather, serves as a reliable assessment of the soil resource. This level of mapping will help determine whether or not areas suitable for development exist elsewhere on the property.

The Class B - HIS map uses a connotative soil mapping legend of soil properties as the basis for mapping. These soil properties are essential parameters in the APA review process. HIS maps are not available from the U.S.D.A. Soil Conservation Service. They must be mapped by a qualified soil scientist. The mapping rate is approximately 45 to 60 acres per day.

The Class B - HIS maps will be conducted in accordance with the following standards. These standards reflect the requirements of the Adirondack Park Agency.

Criteria for High Intensity Soil Mapping - Class B:

Base Map

The base map for the Class B - HIS map shall consist of:

1. A current perimeter survey by a licensed land surveyor.
2. Map scale of 1" = 400' (1:4800) or larger.
3. Topography with 5' contour intervals or less.
4. Ground control is required and shall be at the density specified by the soil scientist. The following guidelines are recommended:
   a. One identified points or features per acre.
   b. The points uniformly distributed throughout the parcel.
   c. Points or features will be shown on base map.

If the soil mapping is transferred to another map base of a differing scale, the original mapping scale must be denoted.

Soil Mapping Legend

The Class B - HIS map utilizes the same connotative legend as the Class A - HIS map with the exception of the 5th Symbol. The 5th Symbol will be a "B" to identify the area mapped as meeting the standards for a Class B - HIS map.

Map Unit Purity

The soil within an area enclosed by a soil boundary line (a map unit delineation) will have a minimum of 75% of the soil properties inferred by the soil map symbol placed within that map unit delineation. Inclusions of limiting soil types can comprise up to a maximum of 15 percent of the map unit delineation. The control section for determining soil properties is from the mineral soil surface to a depth of 48 inches.

Minimum Size Delineation

The Class B - High Intensity Soil map will delineate mapping units to a minimum size of 10,000 square feet. Smaller areas of contrasting soils should be shown with the use of spot symbols.

Accuracy of Soil Boundary Line Placement

Soil boundary line placement should be accurate within 50 feet.

Delineation of Drainage Features

All intermittent or permanent drainage channels will be delineated with the same precision as was required for the soil map delineations. The drainage channels will be marked with an arrowhead to indicate the direction of flow as they enter a waterbody or wetland or as they extend past the boundaries of the mapped area.

3. MEDIUM INTENSITY SOIL MAPS

Medium Intensity soil maps are the conventional county soil surveys of the U.S.D.A. Soil Conservation Service, National Cooperative Soil Survey program. This type of soil survey is also termed an Order 2 or detailed soil survey by the SCS. Medium Intensity Soil Surveys are used primarily as a planning tool. Lands classified by Adirondack Park Land Use and Development Plan Map as Rural Use, Low Intensity Use, Moderate Intensity Use, Hamlet, Industrial, State Administrative and State Intensive Use are mapped at this level by the SCS. Agricultural areas classified as Resource Management are likewise mapped at this level. For some projects, the detail provided by a Medium Intensity Soil Survey may be adequate. If the mapping is not available from the SCS, a medium intensity soil survey may be required and must be mapped by a qualified soil scientist. The mapping rate is approximately 200 to 300 acres per day.

Criteria for Mapping Medium Intensity Soil Maps:

Base Map

The scale of the base map should be no smaller than 1:24,000 and is generally smaller than 1:10,000. If the soil mapping is transferred to another map base of a differing scale, the original mapping scale must be denoted.

Soil Mapping Legend

Phases of soil series will be used to define the mapping units. The soil series may be used as consociations or complexes. If complexes of soil series are used, the percentage of each soil series must be listed.

Map Unit Purity

Accuracy requirements are in accordance with USDA-SCS National Cooperative Soil Survey standards for similarly scaled medium intensity soil survey maps. Map unit purity requires that 75 percent or more of the soil within an area enclosed by a soil boundary line (mapping unit delineation) fit within the range of the soil series named in that mapping unit. The remainder of the delineation should consist of similar non-limiting soils, although dissimilar soils can comprise up to 15 percent of the mapping unit.

Minimum Size Delineation

Medium intensity soil surveys maps will delineate mapping units to at least a minimum size of five acres. Smaller areas of contrasting soils should be shown with the use of spot symbols.

Accuracy of Soil Boundary Line Placement

Soil boundary line placement should be accurate within 100 feet.

Delineation of Drainage Features

All permanent drainage channels and well defined intermittent drainage channels will be delineated with the same precision as required for the soil map delineations. The drainage channels will be marked with an arrowhead to indicate the direction of flow as they enter a waterbody or wetland, or as they extend past the boundaries of the mapped area.

4. RESOURCE SOIL SURVEY

Resource Soil Surveys are used in less intensive land use areas as part of the U.S.D.A. Soil Conservation Service, National Cooperative Soil Survey program. This type of soil survey is classed as an Order 3 soil survey. The resource soil survey provides valuable information to assess sites for forestry or other low intensity uses. Many of the resource management and State lands within the Park are mapped as an Order 3 soil survey by the SCS.

In areas where a multi-lot subdivision is proposed and the lot size is over 30 acres, the resource soil survey is appropriate when combined with soil test pits and other on-site information to verify the suitability for proposed development such as building and sewage disposal sites. If the mapping is not available from the SCS, a resource soil survey may be required and must be mapped by a qualified soil scientist. The mapping rate is approximately 500 to 750 acres per day.

Criteria for Mapping for Resource Soil Survey:

Base Map

The scale of base map should be no smaller than 1:62,500, and is generally smaller than 1:24,000. If the soil mapping is transferred to another map base of a differing scale, the original mapping scale must be denoted.

Soil Mapping Legend

The USDA-SCS Adirondack Soil Survey Legend will be used as the bases for soil mapping units. This legend uses consociations or complexes of two or three soils series to describe landscapes. It is available upon request from the APA or SCS.

Map Unit Purity

Accuracy requirements are in accordance with USDA-SCS National Cooperative Soil Survey standards for similarly scaled soil survey maps. Map unit purity requires that 75 percent or more of the soil within an area enclosed by a soil boundary line (mapping unit delineation) fit within the range of the soil series named in that mapping unit. The remainder of the delineation should consist of similar soils, although dissimilar soils can comprise up to 15 percent of the mapping unit.

Minimum Size Delineations

Resource soil survey maps will delineate mapping units to a minimum size of 35 to 45 acres. Smaller areas of contrasting soils should be shown with the use of spot symbols.

Accuracy of Soil Boundary Line Placement

Soil boundary line placement should be accurate within 250 feet.

Delineation of Drainage Features

All permanent drainage channels will be delineated with the same precision as required for the soil map delineations. The drainage channels will be marked with an arrowhead to indicate the direction of flow as they enter a waterbody or wetland with no defined channel, or as they extend past the boundaries of the mapped area.

5. MESO SOIL SURVEY

Meso Soil Surveys were completed by the U.S.D.A. Soil Conservation Service in the early 1970's and maps are available for all the counties within the Adirondack Park. They served as a planning tool in the development of the Adirondack Park Land Use and Development Plan Map. Meso soil maps are used for regional analysis. However, due to the general nature of the mapping units, these maps do not contain the site specific information required for review of projects by the Adirondack Park Agency.

APPENDICES

U.S.D.A. SOIL CONSERVATION SERVICE - SOIL MAPPING

MESO SOIL SURVEY MAPS

Meso soil maps are available for all areas in New York State at a scale of 1:62,500. The minimum map unit size is 200 to 500 acres in size and the accuracy of the soil line is

1000 feet, depending on the county.

COUNTY SOIL SURVEY MAPS

Soil survey maps are available for most counties in New York State. They are mapped at a Medium (Detailed, Order 2) or Resource (Order 3) intensity depending on the county or portion of the county. The status and the availability of the county soil surveys are described as follows:

Clinton County:

Clinton County is being mapped at a scale of 1:24,000 and as of 1990 is 75 percent completed. The State land in the county and the areas classified as Resource Management by the Adirondack Park Land Use and Development Plan Map are being mapped as a resource soil survey. The remainder of the county is being mapped as a medium intensity soil survey. The minimum mapping unit size is 35 to 45 acres for the resource soil mapping and 5 to 7 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
RFD #6, Box 16A
Plattsburgh, NY 12901
(518) 561-7373

Essex County:

Essex County is being mapped at a scale of 1:24,000 and as of 1990 is 50 percent completed. The State land in the county and the areas classified as Resource Management by the Adirondack Park Land Use and Development Plan Map are being mapped as a resource soil survey. The remainder of the county is being mapped as a medium intensity soil survey. The minimum mapping unit size is 35 to 45 acres for the resource soil mapping and 5 to 7 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
RR #1, Box 1139 J
Westport, NY 12993
(518) 962-8225

Franklin County:

The northern part of Franklin County is completely mapped and was published in 1958 at a scale of 1:20,000. It is a medium intensity soil survey. The minimum mapping unit size is generally 5 to 10 acres and can be 10 to 15 in woodlands and on State lands.

Only meso soil maps are available for the southern part of Franklin County.

For soil information contact:
U.S.D.A. Soil Conservation Service
Agricultural Service Center
Route 3
Malone, NY 12953
(518) 483-4061

Fulton County:

Fulton County is being mapped at a scale of 1:24,000 and as of 1990 is 20 percent completed. The State land in the county and the areas classified as Resource Management by the Adirondack Park Land Use and Development Plan Map are being mapped as a resource soil survey. The remainder of the county is being mapped as a medium intensity soil survey. The minimum mapping unit size is 35 to 45 acres for the resource soil mapping and 5 to 7 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
RD #1, Box 239
Johnstown, NY 12095
(518) 762-0079

Hamilton County:

Soil mapping in Hamilton County has just been completed. It is a resource soil survey mapped at a scale of 1:62,500. In addition to the resource soil survey, a medium intensity soil survey has been completed for lands with a potential for intense uses such as all privately owned lands except those designated as Resource Management by the Adirondack Park Land Use and Development Plan Map. The minimum mapping unit size is 35 to 45 acres for the resource soil mapping and 5

to 10 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
Hamilton County Courthouse
Lake Pleasant, NY 12108
(518) 548-3991

Herkimer County:

Two small areas of Herkimer County have been mapped as special projects at a scale of 1:24,000. These are medium intensity soil surveys and include portions of the Fulton Chain of Lakes, from Old Forge north and the Hinckley Reservoir corridor area.

A published soil survey is available for the southern part of the county, south of the Park. Only meso soil maps are available for the remainder of the county.

For soil information contact:
U.S.D.A. Soil Conservation Service
113 George Street
Herkimer, NY 13350
(315) 866-2651

Lewis County:

Only meso soil maps are available for the Lewis County portion of the Adirondack Park.

For soil information contact:
U.S.D.A. Soil Conservation Service
Upper Stowe street
P.O. Box 113, RD #2
Lowville, NY 13367
(315) 483-4061

Oneida County:

Oneida County is currently being mapped at a scale of 1:24,000. It is a medium intensity soil survey. The minimum mapping unit size is 5 to 7 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
Oneida County Farm and Home Center
RR #1, Box 126C, Second Street
Oriskany, NY 13424
(315) 736-3334

Saratoga County:

Saratoga County is being mapped at a scale of 1:24,000 and as of 1990 is 90 percent completed. The State land in the county and the areas classified as Resource Management by the Adirondack Park Land Use and Development Plan Map are being mapped as a resource soil survey. The remainder of the county is being mapped as a medium intensity soil survey. The minimum mapping unit size is 35 to 45 acres for the resource soil mapping and 5 to 7 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
Municipal Center
50 West High Street
Ballston Spa, NY 12020
(518) 885-6900

St. Lawrence County:

St. Lawrence County has been completely mapped. For areas outside the Park, mapping is at a scale of 1:24,000 and it is a medium intensity soil survey. For portions within the Park it is a resource soil survey mapping at a scale of 1:62,500. In addition to the resource soil survey, a medium intensity soil survey has been completed for lands with a potential for intense uses such as all lands except for State lands and those designated as Resource Management by the Adirondack Park Land Use and Development Plan Map. The minimum mapping unit size is 40 acres for the resource soil mapping and 5 to 10 acres for the medium intensity soil mapping.

For soil information contact:
U.S.D.A. Soil Conservation Service
3 Commerce Lane
Canton, NY 13617
(315) 386-2975

Warren County:

Warren County is completely mapped and the survey was published in 1989 at a scale of 1:15,840. It is a medium intensity soil survey. The minimum mapping unit size is generally 5 to 10 acres and can be 10 to 15 in woodlands and on State lands.

For soil information contact:
U.S.D.A. Soil Conservation Service
122 Main Street
Warrensburg, NY 12801
(518) 623-3119

Washington County:

Washington County is completely mapped and the survey was published in 1975 at a scale of 1:20,000. It is a medium intensity soil survey. The minimum mapping unit size is generally 5 to 10 acres and can be 10 to 15 in woodlands and on State lands.

For soil information contact:
U.S.D.A. Soil Conservation Service
Box 15C RD #1 Route 4
Hudson Falls, NY 12839
(518) 747-2154

SOIL DRAINAGE CLASSES

General Definition

SOMEWHAT POORLY DRAINED: Water is removed slowly enough so that the soil is wet for significant periods during the growing season.

POORLY DRAINED: Water is removed from the soil so slowly that the soil is saturated periodically during the growing season or remains wet for long period.

VERY POORLY DRAINED: Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. In New York, these soils generally have a water table above the surface of the ground during the early part of the growing season.

Criteria for field determinations

VERY POORLY DRAINED soils have an aquic moisture regime or are artificially drained and:

1. Have organic soil materials that extend from the surface to a depth of 16" or more; or
2. Have a histic epipedon (either mineral or organic); or
3. Have an epipedon that has "n" value of greater than 0.7;

POORLY DRAINED soils have an aquic moisture regime or are artificially drained and:

1. Have an albic horizon that lies just above a horizon having hue 10YR or redder, value less than 5, chroma less than 4; and have faint to prominent mottles in the albic horizon less than 12" below the soil surface; or
2. Within 20" of the soil surface have textures of dominantly very fine sand or finer with distinct or prominent mottles less than 12" below the soil surface and have a subsurface horizon less than 20" below the soil surface that has dominant color, moist, in the matrix of chroma 2 or less, value 4 or more; or
3. Within 20" of the soil surface have textures of dominantly loamy fine sand or coarser with distinct or prominent mottles less than 12" below the soil surface and have a subsurface horizon less than 20" below the soil surface that has dominant color, moist, in the matrix of chroma 3 or less, value 4 or more; or
4. Have any textures with no mottles and have a subsurface horizon less than 20" below the soil surface that has dominant color, moist, in the matrix of chroma 1 or less, value 4 or more; or

5. Have a mineral epipedon greater than 12" and less than 20" that is underlain with a mottled subsurface horizon less than 20" below the soil surface that has dominant color, moist, in the matrix of chroma 2 or less, value 4 or more;

SOMEWHAT POORLY DRAINED soils have distinct or prominent mottles, that are not relic mottles, at a depth less than 15" below the soil surface;

MODERATELY WELL DRAINED soils have distinct or prominent mottles, that are not relic mottles, between a depth of 15" and 40" below the soil surface;

WELL DRAINED soils have textures in any horizons between 10 to 40" of very fine sand or finer;

EXCESSIVELY DRAINED soil are all other native soils.

HYDRIC SOILS

The information presented here for the determination of hydric soils is from the Federal Manual for Identifying and Delineating Jurisdiction Wetlands, Federal Interagency Committee for Wetland Delineation, 1989.

Technical Definition

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part (U.S.D.A. Soil Conservation Service 1987). An area has hydric soils when the following criteria are met:

1. All Histosols except Folists; or

2. Soils in Aquic suborders, Aquic subgroups, Albolls suborder, Salorthids great group, or Pell great groups of Vertisols that are:

   a. somewhat poorly drained and have water table less than 0.5 feet from the surface for a significant period (usually a week or more) during the growing season, or

   b. poorly drained or very poorly drained and have either:

      (1) water table at less than 1.0 feet from the surface for a significant period (usually a week or more) during the growing season if permeability is equal to or greater than 6.0 inches/hour in all layers within 20 inches, or

      (2) water table at less than 1.5 feet from the surface for a significant period (usually a week or more) during the growing season if permeability is less than 6.0 inches/hour in any layer within 20 inches; or

3. Soils that are ponded for long duration or very long duration during the growing season; or

4. Soils that are frequently flooded for long duration or very long duration during the growing season.

Note: Long duration is defined as inundation for a single event that ranges from seven days to one month; very long duration is defined as

inundation for a single event that is greater than one month; frequently flooded is defined as flooding likely to occur often under usual weather - more than 50 percent chance of flooding in any year or more than 50 times in 100 years.

Field Evidence of Hydric Soils

The presence of one or more of the following indicators shall be diagnostic of the presence of hydric soils:

a. Organic soils (Histosols) or mineral soils with a histic epipedon:

Histosols are organic soils (mostly peats and mucks) that have organic materials in more than half (by volume) the upper 32 inches of the soil profile unless the depth to bedrock or fragmental materials is less than 32 inches or the bulk density is very low.

A histic epipedon is an 8- to 16-inch soil layer at or near the surface that is saturated for 30 consecutive days or more during the growing season in most years and contains a minimum of 20% organic matter when no clay is present, or a minimum of 30% organic matter when 60% or greater clay is present. In general, a histic epipedon is a thin horizon of peat or muck if the sod has not been plowed.

b. Gleying or mottling with a soil matrix chroma of less than or equal to 2 in mineral soils, is determined as follows:

(i) Soil samples shall be taken at approximately 18 inches in depth, or immediately below the 'A' horizon, whichever is higher in the soil profile, and the sample shall be moistened if dry at the time of examination.

(ii) Munsell Soil Color Charts shall be used to record soil matrix color and mottle color (i.e., hue, value, and chroma).

(iii) Munsell Soil Color Charts shall be used to establish the presence or absence of gleying.

(iv) The following diagnostic soil key shall be applied to confirm whether the colors in the soil matrix are indicative of hydric soil conditions:

1a. Soil is mottled:
  2a. Matrix is gleyed .....hydric
  2b. Matrix is not gleyed:

3a. Matrix chroma is ≤2 .....hydric
3b. Matrix chroma is >2 ...not hydric

1b. Soil is not mottled:
4a. Matrix is gleyed .....hydric
4b. Matrix is not gleyed:
5a. Matrix chroma is ≤ 1 .....hydric
5b. Matrix chroma is >1 ...not hydric

c. Hydrogen sulfide odor.

d. Iron or manganese concretions occurring as small aggregates near the soil surface.

e. Ferrous iron.

SOIL TEST PIT DESCRIPTION FORM

Date:_____
Stop Number:_____
Weather:_____
Soil Scientist:_____

Project:_____

Location:_____

Occurrence of Flooding	Stoniness	Boulderiness
none___	extremely___	extremely___
rare___	very___	very___
common___	stony___	bouldery___
frequent___	none___	none___

Vegetation:_____ Snow Cover:_____
Topography:_____ Depth of Frost:_____
Slope Percent:_____% Aspect:_____

SOIL DEPTHS:

Seasonal High Groundwater Table:_____ Depth of Pit:_____
Bedrock:_____ Ground Water:_____
Fast Perc Layer:_____ Rooting Depth:_____
Restrictive Layer:_____

SOIL DESCRIPTION

Parent Material:_____ Soil Series:_____

Horizon	Depth	Color	Texture	Structure	Consistence	% RF	Mottles

GLOSSARY

ALBIC HORIZON: One from which clay and free oxides have been removed or in which oxides have been segregated to the extent that the color of the horizon is determined by the color of the primary sand and silt particles rather than by coatings on these particles (see page 8 in Keys to Soil Taxonomy). Also referred to as the "E" soil horizon.

ANAEROBIC: A situation in which molecular oxygen is absent from the environment.

AQUIC MOISTURE REGIME: Implies a biochemically reducing regime that is virtually free of dissolved oxygen because the soil is saturated by ground water or by water of the capillary fringe (see page 24 in Keys to Soil Taxonomy).

CHROMA: The chroma notation of color indicates its strength (departure from a neutral of the same lightness) as represented in the Munsell Soil Color Charts.

CONSOCIATION: Soil mapping units dominated by a single soil taxon and similar soils.

CRYIC SOILS: Soil temperature regime where the mean annual soil temperature is higher than 32° F and the mean summer temperature is lower than 47° F. Refer to Soil Taxonomy for specific requirements. In the Adirondacks, the cryic soils are generally above 3000 feet MSL.

DISSIMILAR SOILS: Soils that differ appreciably in one or more properties, and the differences generally are enough to affect major interpretations.

EXCAVATED: Areas where soil material has been removed. Surface and subsoil layers, or horizons, are absent, or occur as remnants lacking horizon continuity from which a naturally developed soil profile can be identified.

EARTH SLIPPAGE: Earth slippage refers to soil movement which occurs when the bottom surface of a soil mass becomes slippery and fluid enough to slide down slope. If the sliding material is sufficiently fluid, it can also be called an earth or mud flow. Earth slippage will commonly occur in the Adirondack Park on inadequately placed or compacted filled land with steep slopes or on naturally occurring lacustrine silt and clay terraces which have been steeply dissected by streams and rivers.

FLOODED: A condition in which the soil surface is temporarily covered with flowing water from any source, such as streams overflowing their banks, runoff from adjacent or surrounding slopes, inflow from high tides, or any combination

of sources.

FILL: Areas where soil or non-soil material has been mechanically placed covering the natural land surface. The fill is 12" or more in thickness on greater than 50% of the area. (Referenced from Soil Taxonomy, page 2, Buried Soils).

FREQUENTLY FLOODED: A class of flooding in which flooding is likely to occur often under usual weather conditions (more than 50 percent) chance of flooding in any year, or more than 50 times in 100 years).

FOREST FLOOR: The surface organic soil horizons which includes fallen leaves, twigs, branches and other un-decomposed organic debris ("Oi") and the partially decomposed and decomposed organic horizons ("Oe" and "Oa") common to forested sites. Synonymous with the term "organic mat" in describing organic soil horizons overlying a natural mineral soil.

FRIGID SOILS: Soil temperature regime where the soil is warmer in the summer than one in the cryic regime, but its mean annual temperature is lower than 47° F. Refer to Soil Taxonomy for specific requirements. In the Adirondacks, the frigid soils range from 500 to 1000 feet as a base elevation to an upper limit of 3000 feet MSL.

GLEY COLOR: Soil colors indicating a zone in the soil where saturation with stagnant water has produced and preserved a reduced soil environment (anaerobic condition).

HISTIC EPIPEDON: A soil layer, normally at the surface, that has a high volume of organic soil materials. (See page 5 in Keys to Soil Taxonomy).

GROWING SEASON: The portion of the year when soil temperatures are above biologic zero (5 degrees Centigrade), as defined by Soil Taxonomy. The following growing season months are assumed for each of the soil temperature regimes:

Mesic:	April-October
Frigid:	May-September

HUE: The hue notation of color indicates its relation to red, yellow green, and blue as represented in the Munsell Soil Color Charts.

HYDRIC SOIL: A hydric soil is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil. Hydric soils are wetland soils.

HYDROPHYTIC VEGETATION: Plant life growing in water or on a

substrate that is at least periodically deficient in oxygen as a result of excessive water content.

LIMITING SOIL: A soil that differs appreciably in one or more soil properties from the named soil type of the soil map unit. The difference in soil properties is more restrictive than the named soil type. The limiting soil type differs by 2 or more drainage classes from the named soil type, has 1 or more restrictive soil layers, or has slopes greater than 15% if the named soil type is B slope or C slope.

LONG DURATION: A duration class in which inundation for a single event ranges from 7 days to 1 month.

MESIC SOILS: Soil temperature regime where the mean annual soil temperature is higher than 47° F but lower than 59° F. Mesic soils are located below 500 feet MSL in the northern portion of the Park and below 1000 feet MSL in the southern portion.

MINERAL SOIL MATERIALS: Soil materials containing less than 12 percent organic carbon by weight. Refer to Soil Taxonomy for specific requirements.

MINERAL SOIL SURFACE: The surface of the upper mineral soil horizon in a mineral soil.

MOTTLES: Mottling refers to spots of contrasting colors in a soil horizon, with both high chroma and low chroma represented in the variegated colors. Soil scientist use mottling to determine the depth at which the soil is saturated with water at some period of the year (unless, the soil is artificially drained). It is also implicit in the meaning that the temperature of the horizon is above the biological zero
(5
•
C) during at least part of the time when the horizon is saturated.

MOTTLE CONTRAST: Refers to the degree of visual distinction that is evident between associated colors. Contrast may be described as faint, distinct, or prominent:

> Faint: Evident only on close examination. Faint mottles commonly have the same hue as the color to which they are compared and differ no more than 1 unit of chroma or 2 units of value. Some faint mottles of similar but low chroma and value differ by 2.5 units (one page) of hue.
>
> Distinct: Readily seen but contrast only moderately with the color to which they are compared. Distinct mottles commonly have the same hue as the color to which they are compared but differ by 2 to 4 units

of chroma or 3 to 4 units of value; or differ from the color to which they are compared by 2.5 units (one page) of hue but no more than 1 unit of chroma or 2 units of value.

Prominent: Contrast strongly with the color to which they are compared. Prominent mottles are commonly the most obvious color feature of the section described. Prominent mottles that have medium chroma and value commonly differ from the color to which they are compared by at least 5 units (two pages) of hue if the chroma and value are the same; at least 4 units of value or chroma if the hue is the same; or at least 1 unit of chroma or 2 units of value if hue differs by 2.5 units (one page).

"N" VALUE: Refers to the relation between the percentage of water under field conditions and the percentages of inorganic clay and of humus (see page 22 in Keys to Soil Taxonomy).

NON-LIMITING SOIL: A soil type that has most soil properties common to the named soil type of the soil map unit. The non-limiting soil differs by 1 drainage class, has a different parent material or is any slope class lower than the named soil type, and has no additional restrictive features.

ORGANIC MAT: The surface organic soil horizons includes fallen leaves, twigs, branches and other undecomposed organic debris ("Oi") and the partially decomposed and decomposed organic horizons ("Oe" and "Oa") common to forested sites. It is synonymous with the term forest floor in describing organic soil horizons overlying a natural mineral soil.

ORGANIC SOIL: Soils that are either saturated with water and have organic soil materials that extend from the surface to at least a depth of 16 inches, or are not saturated with water but have soil organic layers that extend from the surface to a depth of at least 4 inches and overlay bedrock. Refer to Soil Taxonomy for specific requirements.

ORGANIC SOIL MATERIALS: Soil material containing at least 18 percent organic carbon by weight. Refer to Soil Taxonomy for specific requirements.

PERMEABILITY: A parameter of the soil that enables water to move downward through the profile, measured as the number of inches per hour that water moves downward through the saturated soil.

PHASE, SOIL: A subdivision of a soil series based on soil related land use features (e.g., slope, surface texture, and stoniness).

PONDED: A condition in which water stands in a closed depression on the landscape. The water is removed only by percolation or evaporation, and

remains wet for long periods.

REGRADED: Areas where the natural soil profile has been disturbed or destroyed by mechanical activity. The surface and subsoil horizons are not recognizable.

RELIC MOTTLES: Reddish brown layers that are relics of an earlier water table situation. Commonly, relic mottles appear as thin reddish brown horizontal layers below 3 to 4' below the soil surface. They are quite common on exposed faces in sand and gravel pits. The origin of these so called "iron layers" may be related to a water table situation entirely different than exists today. The water table at that time was perhaps considerably higher than the present seasonal high groundwater table.

SATURATED: A condition in which all voids (pores) between soil particles are filled with water.

SEASONAL HIGH GROUNDWATER TABLE (SHGWT): The highest surface of a zone of saturated soil which is at least six inches thick and which persists during the average year for more than a week when the ground is free of frost. Referenced from 9 NYCRR 574.5. (a.)(1.)(vi.)(a.), NYS Adirondack Park Rules and Regulations.

SIMILAR SOILS: Soils that are alike or much alike in most properties, and share limits of those diagnostic properties in which they differ.

SOIL DRAINAGE CLASSES: The soil drainage classes indicate the depth to the seasonal high groundwater table in a soil. Specific definitions and criteria for field determinations are in the appendix.

SOIL EROSION: Soil erosion refers to the detachment and movement of soil by wind, water, ice or gravity. Accelerated soil erosion is any rapid increase in the amount or rate of such soil movement usually due to man's activities. Soil erosion is often described in terms of its visual effect on the landscape: sheet erosion is the uniform removal of soil from a slope; rill erosion is the formation of small runoff channels due to uneven removal of soil; gully erosion is the severe localized removal of soil by water runoff which forms and enlarges channels.

SOIL DEPTH: The depth from the top of the mineral soil surface to the feature being measured.

SOIL MAP UNIT: An area defined and named in terms of its soil properties. Each individual area enclosed on the map is a delineation. Each map unit contains a map symbol and that symbol represents one soil type with a defined set of soil properties.

SOIL SERIES: A group of soils having horizons similar in differentiating characteristics and arrangements in the soil profile, except for texture of the surface layer. Established soil series are those recognized by the U.S.D.A. Soil Conservation Service and published as an Official Soil Description (OSD).

SOIL SURFACE: The top of the mineral soil surface for a mineral soil or the base of the aerial parts of the growing plants in an organic soil.

SOIL TEXTURES: Classes based on different combinations of sand, silt and clay. The amount of each soil separate contained in a soil sample will determine its texture.

SUPER SPODIC SOIL: Soils in the frigid temperature regime that contain greater accumulations of organic matter and sesquioxides with the upper mineral soil horizons. Super spodic soils are common above 2200 feet MSL due to the cool moist environment encountered at these elevations.

VALUE: The value notation of color indicates its lightness as represented in the Munsell Soil Color Charts.

VERY LONG DURATION: A duration class in which inundation for a single event is greater than 1 month.

WATER TABLE: See seasonal high groundwater table.

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