

METROPOLITAN CONSERVATION

Thank you for inviting me to join in your seminar. I'm pleased to note the wide range of organizations represented here, because you all do need to work more closely together. You have some mutual concerns.

For many of you, your primary concern is construction projects--you want to continue making Atlanta one of the finest metropolitan areas in the country; you want to move Georgia up front in economy and liveability; and you want to make a living. Others may have a primary role in the field of environmental protection--an emphasis on the "liveability" of this part of the South. Both groups can meet their aims if construction is guided to the most favorable sites and if construction methods allow for control of sediment and storm water.

Material for speech by Norman A. Berg, Associate Administrator, USDA Soil Conservation Service, at a Seminar on Sediment Control on Construction Sites for Environmental Protection, Atlanta, Georgia, April 4, 1972.

The growth of suburbia, and of new towns, is happening everywhere in our country--almost a million acres of land a year is shifted from rural to urban uses. The demands on our resource base of land, water and air are rapidly increasing. There are more Americans every year, and they continue to demand more of their environment--an upgrading of food and housing, and an increase in the use of water for homes, industries, and recreation.

My agency, the Soil Conservation Service, and local conservation districts have been working for nearly 4 decades to help landowners--mainly in rural America--operate in such a way as to protect their land and water resources and those of their neighbors...and make a living...and produce food and fiber that is the envy of the world. In that time we've developed a number of sound land use principles and methods that are widely used on agricultural and rural lands.

In the past decade, we have found new challenges and new forms of service in the suburbs.

There, in areas of rapidly changing land use, private citizens and professional conservationists are developing, testing and adapting conservation practices to the business of "growing crops" of homes and shopping centers and highways. We have learned how to help builders and planners operate in such a way as to protect their property--and the land and water supplies downstream from the construction sites--and make a living...and produce communities that people enjoy living in.

Let's take a look at metropolitan land use and conservation of soil and water quality.

LIGHTS OUT--SLIDES READY

1. Before we can understand and cope with the land use problems that face metropolitan areas today, we must first understand the soil.
2. Too many of us take soil for granted. Yet it's the basis for almost everything we do.
3. Soil supports our buildings.
4. It grows our food.
5. It gives us a place to play.
6. There are thousands of different soils in the United States.
7. Some are well suited for crop production.
8. While others erode too easily for cultivation of any kind.
9. Some have good strength for supporting roads, houses, and other structures.
10. While others break up under the weight.
11. For a quality environment, it's essential to know where each of these different kinds of soil is located and to know its potentials and limitations.

12. For example some are highly erosive and can't carry peak runoff water as we sometimes expect them to.
13. Some soils are tight like this one near Atlanta, and won't let water penetrate easily. On these, septic tanks fail, basements flood, and at times foundations are damaged.
14. Other soils have a high shrink-swell capacity. Buildings on these unstable soils shift and crack.
15. Even concrete buckles under the extreme pressures of these soils like this slab of concrete along a modern superhighway.
16. Check the roof and balcony lines of these garden apartments. The structural damage is readily apparent. The buildings shouldn't have been built on such unstable soils without special foundation work.
17. This school, near Denver, Colorado, was built in 1963 at a cost of \$2.4 million.
18. It was condemned six years later in 1970.
19. Investigations showed that the buckled walls and fallen ceilings were the result of building the school on unstable soils. \$600,000 has been appropriated for repairs, but some engineers doubt if repair is possible.
20. Today one of our most serious and costly soil problems is sediment. Farming is still a major source of sediment in America--damaging the farmer's land, his crops, and the quality of the water that leaves the farm.
21. But there are other reasons why a million acre-feet of sediment piles up in our major reservoirs every year. According to a study by the U.S. Army Corps of Engineers and the Soil Conservation Service, there are some 550,000 miles of eroding streambanks that produce sediment.

22. Some 56 million tons of sediment per year come from unstabilized roadsides.
23. There are more than 4 million acres of surface mined lands that produce sediment . . .
24. And affect water quality in other ways.
25. But a growing sediment pollution menace is urban development.
26. It is said that in the next 10,000 days we will build in and around our major cities the equivalent of everything we've built since Plymouth Rock. And a staggering amount of soil will be moved in doing it.
27. This burgeoning growth is the result of our increasing population. We are adding 6,000 people to our cities each day. That's another Hartford every 30 days. Another Atlanta in under 3 months. Another Los Angeles in a year.
28. For the most part, this growth is accomplished by chance. A farm is sold, and a crop of houses sprouts up instead of corn or cotton.
29. All too often, the new crop doesn't have the soil protecting safeguards of the farm crop it replaces. The land is stripped bare and left vulnerable. Soil erosion on a square mile of land can skyrocket from as little as 50 tons a year on farmland to more than 25,000 tons a year on land being converted to suburban uses.
30. When it rains, the runoff water rips away the unprotected soil, damaging the construction site itself.

- 31. The eroded soil material washes from higher ground to lower ground.
- 32. And is carried along in the water to storm sewers to reappear downstream.
- 33. Here a muddy tributary from a construction site joins a relatively sediment-free stream that drains farmland.
- 34. The soil particles don't stay suspended in the water for long. Many are dropped out along the course of the stream, filling the streambed and clogging expensive drainage structures.
- 35. The soil-laden water pours into lakes and reservoirs. . .
- 36. Reducing the storage capacity, increasing the cost of water treatment, and destroying the usefulness of lakes for recreation and scenic enjoyment.
- 37. The cost of removing all this mud and restoring our lakes and waterways is staggering.
- 38. About one and a half billion cubic yards of storage space a year is lost to sediment. The cost of dredging ranges from 50 cents to two dollars a cubic yard--a bill that is paid, not by the people who create the problem, but by the taxpayers, many of them far downstream from the source of sediment.
- 39. But much of this damage can be halted. We have the basic tools and technical knowledge right now. And they are being put to good use in many areas.
- 40. For example, the soil survey is a scientific inventory of soil potentials and limitations.

- 41. It can help engineers and others evaluate the suitability of each soil for various uses.

- 42. The soil map can identify land that has good qualities for roads.

- 43. It can help locate good sites for private dwellings.

- 44. It can help planners find safe places for sanitary landfills.

- 45. It can help determine locations for lakes and other recreation areas.

- 46. It also can identify soils that may mean trouble, such as those that are highly erosive.

- 47. Or those with a high shrink-swell capacity.

- 48. The Department of Agriculture has been making soil surveys for more than 70 years. In making them, a soil scientist studies the land acre-by-acre, its vegetation, and its features.

- 49. He identifies the different kinds of soil by examining the soil layers.

- 50. He determines the slope, possible erosion hazard, and depth to rock if it occurs within five feet of the surface.

- 51. He determines the color, tests the acidity or alkalinity, estimates the proportions of sand, silt, clay and organic matter.

- 52. He classifies the soils according to a national system and outlines each kind of soil on an aerial map before he leaves the field.

- 53. The survey is published, usually on a county basis, by the Soil Conservation Service. The work is done by SCS in cooperation with land-grant universities, and in many instances, other federal, state, and local agencies.

- 54. At first glance, a soils map looks pretty complicated. However, each of the symbols, printed over an aerial photo, stands for a specific kind of soil.

- 55. By checking these symbols against the tables in the survey, we can find a storehouse of information on soil behavior.

- 56. For example, that symbol, HmB2, identifies a soil with slight limitations for residential development, and septic-tank filter fields installed in the area should function properly.

- 57. But move a short distance away to the next soil type and you could have trouble. This soil has a temporary high water table that will result in wet basements and septic-tank failure during parts of the year.

- 58. A little farther to the right, we run into soils that have severe limitations for homes because of a permanent high water table. Also, the shrink-swell capacity is so great that the land is ill-suited for roads and commercial and industrial development.

59. Nevertheless, all three of these soil types are well suited for farming and are among the most productive in the area.
60. And most of them can safely be used for parks, golf courses, wildlife sanctuaries, or plant nurseries.
61. For decades, farmers and ranchers have been using soil surveys to determine proper land use. With the basic soil map, a trained soil conservationist can help the farmer or rancher decide which fields can and cannot be planted to certain crops and what conservation measures are needed to protect the land.
62. And the same basic soil information and technical assistance can help other land users, such as builders, contractors, engineers, land-use planners, and zoning officials. . .in other words, just about anyone who works with the land.
63. For example, heavy rains falling on this exposed soil could have caused severe sediment damage downstream. But not in this case.
64. The developer, with help through his local soil and water conservation district, had built a temporary sediment basin that trapped the sediment-laden water and kept it from polluting waterways downstream.
65. In some cases, diversions can be built to channel surplus water safely around areas of disturbed soil.
66. Quick seeding or sodding of exposed soil around homes drastically reduces erosion problems.
67. On steeper slopes, jute matting can be used to protect the soil until plants can take over the job.

68. In construction areas that must be left unprotected for several weeks, grassed waterways, similar to those used to protect farmlands, conduct runoff water safely off the site without erosion.
69. Grass can be made to grow even on a slope that will carry a lot of runoff water by using boards to make temporary terraces.
70. Trees that had to be cut down can be chipped and used as a mulch to protect the soil until vegetation can be established.
71. In many areas, special soil maps are available that show the suitability of land for one particular purpose such as housing construction, onsite sewage disposal, or agriculture. These maps are color coded in green, yellow, and red to reflect slight, moderate, and severe limitations.
72. This map is color coded for homesites with septic-tank filter fields. You could install a filter field without worry in any area colored green.
73. But if you wanted an attractive lawn around the home, you'd have trouble. This is the same area, color coded this time for lawns, landscaping, and golf fairways. The sandy soil requires almost constant watering during dry periods. In addition, the course texture of the soil calls for frequent applications of fertilizer to feed grass and shrubs adequately.
74. So in many areas there is help available right now in proper land use planning.
75. It is possible to have more homes for people without first wrecking the landscape and polluting our water.
76. It is possible to build commercial or industrial centers a piece at a time without leaving the whole site bare for years.

77. It is possible to build highways, even great ones, without ruining waterways for miles downstream.
78. Citizens and governments in both town and country can work to change the use of land without ruining the land and the water that drains from it, and assure the kind of pleasant surroundings that you in Georgia work toward every day.
79. What does it take? A workable sediment control program is one in which responsibility is transferred all along the line from the people who plan a land-use change, to those who review it, the builder, the bulldozer operator, the sediment-control inspector, the landscape architect, the nurseryman, the homeowner;
80. A workable sediment control program is one that is part and parcel of a larger planning effort. Sediment is but one of the many effects from unwise use of land and water resources. And sediment control efforts, to be most effective, must not be piecemeal but included in a comprehensive body of policies and guidelines for good land use.

NOW IF I MAY HAVE THE LIGHTS, PLEASE.

These are a few of the problems and principles associated with soil and water conservation in the suburbs. Your interest in that subject is very timely because sediment control and land-use policy and other environmental concerns are under discussion in many state legislatures and the U.S. Congress. Several states have taken legislative action in this area over the past several years, and more laws are coming. Some will affect your work.

For example, Vermont requires state permits for large-scale land development. Massachusetts holds review power over some local planning. Connecticut, Georgia, Maryland, New Jersey, and Rhode Island regulate to some degree the use and development of their tidewater lands. Under Maine's new Site Selection Act and Land Use Regulation Act, state agencies use a soil-suitability guide in reviewing applications for urban development. The proposed development must either fit the land or safeguards must be planned to adapt the site and avoid soil and water problems.

Maryland's 1970 Sediment Control Act requires that land development plans be referred to soil conservation districts for approval before building or grading permits are issued. The districts use SCS technical help in evaluating the plans. In 1971 all counties, the city of Baltimore, several municipalities, and both public and private agencies developed sediment control programs.

A new Iowa law places a responsibility on all landowners in the State to control soil erosion. The soil conservation districts are establishing soil-loss limits for different types of land. Then, soil erosion and resulting sediment beyond those limits can be declared a public nuisance and must be abated after a written complaint is received by a soil conservation district.

Pennsylvania's Clean Streams Law was amended in 1971 to designate sediment as a pollutant, so landowners--urban and rural--now may be required to correct pollution-causing situations.

In South Carolina, a 1971 act authorizes the governing body of each county to establish a sediment control program.

It specifically assigns the responsibility for approval of sediment-control plans to the local conservation district.

The Virgin Islands Environmental Protection Act of 1971 gives conservation districts authority to guide land grading and development on the islands. The Puerto Rico Environmental Quality Board refers development plans to be conservation districts for review before approval.

And in Hawaii, which has had statewide planning and zoning requirements for a long time, mounting concern about erosion and sediment problems has led to the drafting of new grading ordinances in three of that state's four counties. A plan outlining conservation measures is a prerequisite to obtaining a grading permit. Urban developments in parts of that State have a very critical impact because construction-caused sediment ends up in lagoons that are protected by reefs, and is very slowly dissipated. Since the material is mostly colorful clays, even a small amount is unsightly around the beaches.

There is more legislation on the way, as I said. Last month I was privileged to attend a soil erosion workshop as part of a National Symposium on State Environmental Legislation sponsored by the Council of State Governments. In letters that were made a part of the Symposium program President Nixon wrote, "In my Messages on the Environment of the last three years I have laid before the Congress the most far-reaching program of environmental improvement every to be considered. Yet we have recognized in all the various areas of proposed Federal action that we must rely on strong State environmental programs. Our objective is to arrive at programs that reinforce each other and speed our achievement of our environmental goals." And Vice President Agnew said in part, "Clearly, the National Symposium represents the first instance wherein a true Federal-State partnership has been formed to draft legislation for enactment by the States as a major means of achieving national objectives for protecting the environment."

At the soil erosion workshop, we reviewed and analyzed the state laws that have been enacted and those now being considered, along with proposed federal legislation in this area. The workshop group named a task force, on which I serve, to draft provisions for a model state law on erosion and sediment control to submit to the Council of State Governments by next month. The group also recommended that "responsibility for an erosion and sediment control regulatory program should be placed in the conservation districts which have the responsibility under the laws of all fifty states for the control of erosion and sedimentation. This would be in conjunction with, but would not replace, those state and local regulatory programs concerned with the quality of soil and water resources and pollution abatement activities.

One speaker at the workshop was Edward Keil, who heads our agency's work in the Caribbean Area and formerly was State Conservationist in Maryland where he led the development of sediment control programs.

He gave several recommendations that are worth repeating:

. Good land use planning in the first place is the best basis for sediment control and for other environmental protection measures.

. Broader type acts including sediment control and other environmental protection would be more practical, because all areas of the country do not have serious sediment problems.

. Environmental protection and sediment control should be fitted into the regular development approval procedures and the existing agencies, rather than creating new agencies.

. Legislation should be simple and should rely on programs to be developed by the industry and concerned agencies that can be implemented by a regulation procedure.

. The confidence and competence of the construction industry should be involved in developing both legislation and the programs in environmental protection and sediment control--for a more practical law, easier to enforce.

. The task force approach has been successful in developing legislation and programs.

. State laws should allow for technical flexibility, because of the wide variety of soils, sites, densities, and types of developments.

. Provisions for grading ordinances should be included.

. Laws should provide a way to eliminate obstacles and adopt new techniques. Task forces should be continued beyond the enactment of the legislation and into the operations of the program.

So state and local governments are gearing up to fight erosion and sediment problems brought about by many land uses. I think the progress is very encouraging. We do need some fundamentals to guide us. Among these would be workable national land use policy-- in which the local-state-Federal partnership concept can be fully effective. There is major national interest and action now in the area of land-use policy.

There are many factors that need special attention and emphasis in developing that body of policies. For example, not all lands are suitable for all purposes. Prime agricultural land, to permit continued efficient agricultural production, should be allocated to that use wherever possible. Needs for industrial and institutional sites, highways, recreation areas, residential developments, and the like must be considered. Unique geological formations, wetlands, and many other landforms important for wildlife or scenic values need full consideration. The desires of local people--land owners and land users and interested groups and organizations--also must be considered in the decision-making process. National policy would need to:

- . Clearly set forth national land use objectives and priorities

- . Define Federal, state and local roles in planning and decision making

- . Include an objective for population distribution that is compatible with a national growth objective

- . Include a grant program that would provide comprehensive coverage

- . Build a framework for establishing unbiased technical judgments about the technical adequacy and consequences of taking action or failing to take action

- . And design a mechanism for allowing the enforcement of land use planning requirements.

In all, we need a bundle of policies that both protects our heritage of natural resources and provides guidance for future economic and social development and growth.

With your help, I think that America can reach these objectives.

The SCS and conservation districts would like to work with you in planning the use or treatment of one tract of land around Atlanta, in county or statewide programs, in the design of national efforts.

The SCS has definite plans for improving its helpfulness in the rural-urban fringe. We recently adopted a long-range framework plan for all SCS activities in the next decade. It contains 67 separate goals and outlines the steps needed to reach each goal. One goal is "Urban and urbanizing land developed according to quality standards to provide a satisfying environment in which to live, work and play." To reach that goal, we are going to work to develop a comprehensive body of resource facts that will help predict the kinds of problems expected and the resource maintenance needed in major kinds of urban developments. We plan to build a system for monitoring the condition of soil and other natural resources. We plan to work closely with state and local governments in setting quality standards for conservation and development, and in preparing and carrying out laws and ordinances. We plan to develop improved conservation techniques for urbanizing land.

And we will work to inform local governments, land developers, and urban residents of the need for correcting critical erosion, sedimentation and water-disposal problems and the need for resource planning to prevent such problems.

Conservation districts also have been at work preparing themselves for the conservation challenges in urban and rural America in the years ahead. Together, we can be of significant help to you in building a better Atlanta and a better Georgia.

The Atlanta area is one of the better areas in the Nation in terms of a living environment. You can help keep it this way--and improve it--by building and planning new developments in the right way. We're ready to help.

And we need your help.

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