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INVENTORY OF ROADSIDE EROSION IN WISCONSIN

Along the 87,000 miles of Wisconsin roads, there are 21,000 sites that produce sediment. If these sites were placed in one continuous strip, it would extend from Madison to New York City and then westward to Los Angeles measuring 3,711 miles long and 16 feet wide. A report on erosion in Wisconsin revealed these facts. In 1967, the Wisconsin chapter of the Soil Conservation Society of America initiated a statewide inventory of erosion on all state, county, and town roads. We are told that this was the first detailed survey of roadside erosion in the nation. The findings were surprising to many: Nearly three-fourths of the sediment-producing sites occurred along town roads. Nearly one-fourth of the sites were found along county roads. Only 3 percent were on state highways. These revelations pinpointed the problem. The increased awareness and understanding of roadside erosion by many people and organizations proved to be one of the most rewarding results of the inventory. Awareness of the problem led to action programs. Today, approximately 50 hydroseeders and mulchers purchased by soil and water conservation districts are helping to accomplish the needed vegetation of the 21,000 identified silt-producing areas. Counties and townships are enacting ordinances and developing policies and procedures for vegetating new highway construction and maintaining established roadsides. Procedures used, results obtained, and expected benefits are briefly outlined.

Highways and highway rights-of-way occupy publicly controlled land, of which we are all stewards. Highways have an important effect on our environment. Runoff from highways frequently drains directly into lakes and streams. For years observers recognized roadside erosion caused by construction and maintenance as one of the principal contribution factors to sedimentation.

Five years ago the extent of roadside erosion was inventoried on all 87,000 miles of Wisconsin highways (1). The survey was an eye-opener. Over 21,000 silt-producing sites were found! On the average, one site for every 4 miles of roadside was found to need erosion control of some kind.

The Wisconsin chapter of the Soil Conservation Society of America (SCSA) initiated the study in 1967. A subcommittee of the Natural Resources Council of State Agencies known as the Roadside Stabilization Working Group was formed. It was made up of representatives from the Wisconsin SCSA; Wisconsin Division of Highways, Department of Transportation; U. S. Soil Conservation Service (SCS); Department of Natural Resources; University of Wisconsin Extension Service; and the Department of Local Affairs and Development. The study included an inventory of all rural state, county, and town roads.

Each county organized a local committee also. Participants in the local committee included county extension agents, soil and water conservation district

supervisors, and personnel from the county highway commission, the Soil Conservation Service, the Department of Natural Resources, the U. S. Forest Service, the county Agricultural Stabilization and Conservation Service (ASCS), and the Farmers Home Administration. Other local, state, and federal agency people frequently helped. The SCS District conservationist usually served as chairman. A number of county rural development committees, then known as technical action panels, chose this as a special project. Several state training sessions were conducted for key leaders. Each county then held training sessions.

Tabulations of sediment-producing areas included length, width, and total area in square feet. Surveyors marked the location in plat books that are now filed in SCS work unit offices. Compilations by townships were prepared (Fig. 1) and sent to the state committee for checking. All 72 counties were summarized on a county and state basis.

Yes, roads are a vital part of America. Roads help us appreciate and understand our natural resources—our soil and our water including lakes and rivers. Our timber, wildlife, mountains, and state parks can likewise be better appreciated.

Published in 1969, the report reveals many interesting facts. If all the erosion sites along roadsides in Wisconsin were placed in one continuous strip, the strip would extend from Madison to New York City and then westward to Los Angeles and would measure 3,711 miles long and over 16 ft wide.

Findings surprised many. Town and county roads account for 97 percent of all roadside erosion. Nearly three-fourths (73 percent) occurs along town roads, and county roads contribute one-fourth (24 percent). The remaining 3 percent exists along state roads where, in general, vegetation is excellent (Fig. 2). In fact, the survey reveals 95.5 miles of every 100 miles of highway have good erosion control.

The published report gives a state summary and details of the findings in each county. Tables include extent of erosion along all roads—town, county, and state roads. One table ranks the 15 counties with the most erosion. This table indicates that one-third of all roadside erosion is found in six counties. It also reveals that over half of the erosion in the state occurs in 15 counties. A map shows quickly where the problems are.

Erosion sites are pinpointed. Town roads, where little or no attention is given to establishment of vegetation, are the worst offenders (Fig. 3). County roads also contribute to the problem. State roads are doing a great job, but some sediment-producing sites were found.

The following benefits are expected from the roadside erosion control program:

1. Improvement in the quality of our environment,
2. Reduction in lake and stream sedimentation,
3. Improvement in highway safety,
4. Enhancement of natural beauty and wildlife habitat, and
5. Reduction in maintenance and reconstruction costs.

Using their best collective judgment, persons making the inventory indicated the erosion control needed. Total figures show that more than half (54 percent) could be controlled by fertilizing, seeding, and mulching. Over one-third (37 percent) required sloping, fertilizing, seeding, and mulching. The remaining 9 percent needed "the works," which includes structures, sloping, fertilizing, seeding, and mulching (Fig. 4).

Erosion was found in every county and in nearly every township. About one-third (36 percent) of the sites were along roads less than 2 years old, whereas the remaining two-thirds were on roads 2 years old or over. The probable causes of erosion were listed as construction, 58 percent; maintenance, 33 percent; and other causes, 9 percent. Many local committees pointed out that considerable erosion was occurring on roads under construction (Fig. 5).

Only areas measuring over 100 sq ft were inventoried. Therefore, the amount recorded does not represent all of the roadside erosion. The state committee prepared individual county supplements to serve town and county officials better.

Figure 1. Sample of township roadside erosion survey.

Township: NORTH BEND

County: JACKSON

ROADSIDE EROSION SURVEY (on Public Roads)

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Col. 1	Col. 2	Col. 3		Col. 4			Col. 5			Col. 6			Col. 7		Col. 8
No.	Location Record number on plat-book. Mark location in red.	Dimensions		Total Area in Sq. Ft. Recorded by Type of Highway. Post when recorded			Control Needed			Causes			History		Note
		Width	Length	Township	County	State & Fed'l	Fert. Seed Mulch	Slope Fert. Seed Mulch	Structure Slope Fert. Seed Mulch	Construction	Maintenance	Other	New-Under 2Y	Old-2Y & More	
①	North Bend Sec 23	20	150			3000		3000		✓				✓	
②	" "Sec. 33	12 10	400 200	4800 2000				6800			✓		✓		
③	" " 33	—	—												Cattle lane on highway - a problem
④	" " 17	20	300	6000			6000				✓		✓		
⑤	" " 7	20	600		12000			12000		✓				✓	
⑥	" " 5	20 40	100 400		2000 16000		2000	16000		✓				✓	
⑦	Example only	20	100		2000				2000			✓	✓		Kickapoo R. Stream-bank erosion - Riprap needed.
⑧	" "	16 20 16	100 300 300	1500 6000 4800				12300		✓				✓	
⑨	" "	3	2600	7200			7200			✓	✓		✓	✓	Easily controlled
	Totals			32,300	32,000	3000	13,200	50,100	2000	5	3	1	4	5	

SAMPLE

Figure 2. Distribution of roadside erosion in Wisconsin.

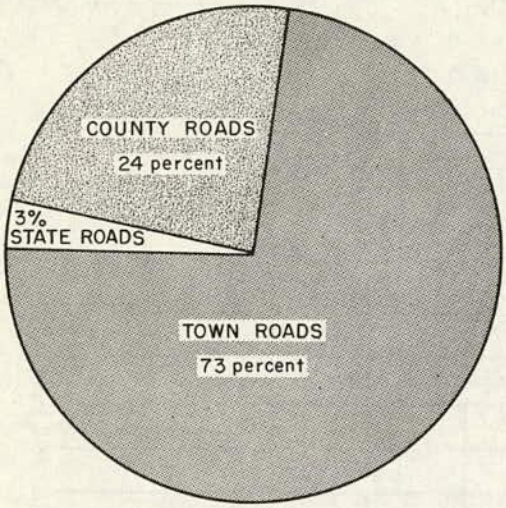

Figure 3. Example of erosion on town road (source: SCS).

Figure 4. Example of roadside needing structure, sloping, fertilizing, seeding, and mulching.

Figure 5. Example of erosion along road under construction.

These supplements tabulate erosion along town, county, and state roads on a legal township basis.

One of the most rewarding results of this inventory was an increased awareness and better understanding of the roadside erosion problem by many individuals and organizations. All of the state's news media widely publicized this study and its findings.

Awareness of the problem led to action programs. Action programs beyond our expectations started as people and organizations woke up. Today, about 50 hydroseeders and mulchers are helping to accomplish the vegetation and revegetation job along Wisconsin roadsides. Soil and water conservation districts and counties are purchasing these labor- and time-saving machines. Counties and townships are enacting ordinances and developing policies and procedures for vegetating new highway construction roadsides and for maintaining established roadsides.

The widely distributed report urges local, county, and state officials to take corrective action as soon as possible. Recommendations include the following:

1. Local agencies and organizations are encouraged to develop and are developing action programs, giving consideration to adopting timetables for achieving adequate control.
2. Soil and water conservation districts and county highway officials should seriously consider the purchase and use of specialized seeding and mulching equipment. As mentioned, about 50 hydroseeders and mulchers have been purchased and are now in operation.
3. Concerned highway departments should control every site reported that is a major source of sediment in Wisconsin's surface waters within the next 5 years. Good progress is being made.
4. State and county officials should consider incentive funds as a way to help speed up roadside erosion control. A committee is working on this. On a statewide basis, county needs can now readily be determined for correcting erosion if and when public works funds are available.
5. Town and county officials are urged to establish vegetation on all newly constructed road cuts and fills. Waiting for natural seedings to occur takes too long. Provisions should be made in some cases to secure wider rights-of-way. Exellent progress is being made.
6. Sediment retention systems should be included in all new construction and should be maintained until permanent structures and vegetation achieve adequate control. As a result of people's concern for the quality of the environment, progress has taken place much sooner than anticipated.
7. All agencies concerned with land use problems on or near highway rights-of-way are encouraged to make use of the report as a basis for arriving at solutions.
8. The state group should organize and make a comparable survey within 10 years to appraise progress and arrive at additional needs for roadside erosion control in Wisconsin.

SUMMARY

The Roadside Erosion Survey in Wisconsin was a great eye-opener to many people. It started an action program for erosion and sediment control. We have the technical know-how to prevent and control erosion along highways. We encourage other states to involve local people in similar activities. Another generation will be here tomorrow. Control of roadside erosion starts in our own backyards. It can be accomplished when everyone works together. SCS is glad to have taken an active part in the statewide inventory of erosion on Wisconsin roadsides.

REFERENCE

1. Erosion on Wisconsin's Roadsides—A Report to Wisconsin Citizens. Wisconsin Chapter of SCSA, Sept. 1969.