

Vermont Environmental Report

Clean Water Act of 1977 Will Change Rules for Small Vermont Communities

Congressional observers in Washington, D.C. and water quality officials in Vermont are hailing the passage of the Clean Water Act of 1977. The Clean Water Act was passed by Congress on the very last day of this year's Session on December 15 and was signed into law by President Carter on December 28, 1977.

The new legislation contains 78 changes in the 1972 Water Pollution Control Act Amendments (PL 92-500). In many important ways the new Act responds to the sewage treatment needs of small, rural communities. As Jackie Shaeffer, a staff member of the Senate Public Works Committee explained it, the fact that the new bill responds to the needs of smaller towns in states like Vermont and West Virginia is no accident.

The new bill was hammered out over a period lasting more than six months, in the Senate Public Works Committee, in public hearings, then on the Senate floor, and finally in a Conference Committee to resolve differences between the Senate bill and one passed earlier by the House of Representatives. Particularly as the law affects rural communities, it represents the point of view of two key members of the Senate Public Works Committee. One of those two key members is Vermont's Senator Robert Stafford. Stafford is the ranking Republican on the Public Works Committee. The other key member is the Committee's Chairman, Senator Jennings Randolph of West Virginia.

Both Stafford and Randolph come from rural states. Just how rural these two states are is explained by Jackie Shaeffer when she says about Vermont, "If you use census definitions of rural places as settlements of 2,500 people or less, then 68% of the folks in Vermont live in places that are classified as rural (by federal measures.)" West Virginia, Ms. Shaeffer adds, just happens to be the

second most rural state in the nation.

These facts, the views of Senators Randolph and Stafford on water quality issues, and the power they hold on the Senate Public Works Committee, combined to assure a fair hearing for the needs of small, rural communities.

These are just some of the key changes in the new law that will affect sewage treatment alternatives.

(1) Federal Money for Private Systems

Individual, privately-owned sewage treatment systems will be eligible under the new Act for federal construction grants providing three conditions are met. First, a municipality must apply for the grant and must certify that public ownership of the system is NOT feasible. Second, the municipality must guarantee that the system will be properly operated and maintained. And third, the total cost and the environmental impact of the individual system must be less than the cost of a centralized system.

(2) "Four Percent" for Alternatives

Rural states will be required to set aside 4% of their construction grant funds to be used only for alternatives to conventional sewage treatment works for municipalities having a population of 3,500 or less, or for highly dispersed sections of larger municipalities.

(3) Incentives for Innovative Treatment Processes

Under the new Act the Environmental Protection

cont...

clean water...

Agency (EPA) will now make grants of 85% (as opposed to the previous 75%) toward the construction cost of treatment facilities that use "innovative or alternative wastewater treatment processes and techniques." And, if these innovative systems later fail to meet "performance standards," EPA may then provide grants for 100% of the cost of modifying or replacing the system.

(4) Evaluation of Alternatives

After September 30, 1978, EPA will not provide funds for a construction project unless a municipality has fully evaluated "innovative and alternative wastewater treatment processes..." Such processes would provide for such things as the re-use of water, recycling techniques, and land treatment. The municipality is also instructed to take account of the "most efficient use of energy and resources."

(5) Money for Projects that are NOT Cost-Effective

EPA may now finance the construction of innovative treatment plants even if they are NOT the most cost-effective, providing that the "life-cycle cost" of such innovative treatment plants does not exceed the life-cycle cost of the most cost-effective alternative by more than 15%.

(6) Clearinghouse on Alternatives

EPA will establish a national clearinghouse on alternative treatment technologies. This clearinghouse will collect and distribute information on new treatment methods. It will serve federal and state agencies, towns, institutions, universities and individuals.

In addition to such amendments that concern sewage treatment alternatives, the Clean Water Act of 1977 contains at least two other changes that may directly affect Vermont municipalities that are building sewage treatment facilities.

(7) Water Conservation

Before determining how much reserve capacity (extra room that is built into a treatment plant to meet anticipated growth) to finance, EPA must now consider "efforts to reduce the total flow of sewage and unnecessary water consumption."

(8) Design & Construction Grants May Be Combined

Where communities have fewer than 25,000 people and where the cost of a sewage treatment plant is less than \$2 million, EPA may now combine Design and Construction grants into a single grant. This should save time and paperwork for small towns.

Water quality officials and informed commentators in Montpelier have responded positively to the new Clean Water Act.

William Brierley of the Environmental Engineering Division of the Vermont Agency of Environmental Conservation said that he felt that the most important element in the new law is the money it would provide. Vermont will get \$22.5 million in 1978, and \$25 million in 1979, 1980 and 1981. "Without that money," said Brierley, "the program is dead, alternative systems, everything."

Michele Frome, who is directing VNRC's Sewage Treatment Workbook Project, struck a note of caution. She talked about the regulations that EPA will have to adopt before the new law can be implemented. "What systems will be considered 'innovative and alternative'?" she asked. "What measures will a town have to take to guarantee the proper operation and maintenance of individual systems?"

Reginald "Tex" LaRosa, Acting Commissioner of the Water Resources Department, was full of praise for the efforts of Senator Stafford to get a law that will respond to the needs of small communities in Vermont. "Historically," LaRosa said, "the economic bias has been for centralized facilities." Now alternatives will have a place in the sun.

UVM Announces Lake Seminar Series

Dr. Alan Cassell of the UVM Water Resources Research Center has announced a series of six seminars on the general subject of "Understanding the Management & Restoration of Lakes."

The Seminar series will address a wide range of lake management and restoration topics and each of the seminars will be led by water resource specialists who are experts in their fields. Some of the topics include:

"Legal Aspects of Lakes," "Quebec's Lake Program," and the experience of the "Cobbossee Watershed Program in Maine."

For more information on this series that began on Tuesday evening, February 14 and that will close on Tuesday evening, May 2, -- write or call Ms. Flossie M. Vernal, Secretary, Vermont Water Resources Research Center, 601 Main Street, Burlington, VT., 05401.

National Wildlife Week Set for March 19 - 25

The National Wildlife Federation (NWF) in Washington, D. C. has announced the 41st annual observance of "National Wildlife Week" from March 19 to March 25.

Once again, the Vermont Natural Resources Council, in cooperation with the State Department of Education and the Department of Fish & Game, is sponsoring National Wildlife Week in Vermont.

The theme of this year's Wildlife Week is "Wildlife Needs You" and the NWF color poster draws attention to the plight of the peregrine falcon, a bird of prey that has been on the national "Endangered Species List" since 1969 and that has largely disappeared from the eastern United States.

The adult peregrine falcon is a large bird, measuring 18 inches from head to tail with a wingspan of approximately 43 inches. It is a handsome bird with a golden head and chest, with a dark brown back. According to Jim Stewart, Fish & Game Coordinator, the falcon is among the fastest of all birds, swooping towards his prey at speeds of up to 150 miles per hour. The peregrine falcon lives in cliffs although falcons have also been known to live on the underside of bridges or on ledges of tall buildings.

The falcon began its decline following World War II. According to State Game Biologist Ben Day the peregrine falcon was found in Vermont until the late 1960's. It was the widespread use of pesticides including DDT that thinned out the eggshells of the female bird. This often prevented successful hatching and led to the falcon's disappearance from the state. "I guess there's no question about it," says Ben Day in labelling pesticides as the chief culprit in banishing the falcon from Vermont.

Just last spring the Eastern Peregrine Falcon Recovery Team made up of wildlife officials from the Vermont Fish & Game Department, the U.S. Fish and Wildlife Service and the U.S. Forest Service, carried out a closely guarded experimental program to return three falcon fledglings to Vermont. The reason for the Department's secrecy, says Day, is that the young peregrine falcon is "extremely wary, extremely sensitive" and as he explains, "the slightest human disturbance would have upset the experiment."

In a technique that wildlife specialists call "hacking" -- three baby falcons that were hatched and raised in captivity at Cornell University were introduced to a natural habitat and then released. The experiment took place at the White Rocks Recreation Area near Wallingford, south of Rutland. This had been a former nesting place for falcons. The three fledglings, two females and one male, were delivered to the site of their eventual release in a hacking box. This box was



Wendy Edelson

built into the cliffs of White Rocks to approximate as near as possible a normal nest or "scrape" of the falcon. The birds were fed through a stovepipe which extended into the box, a feeding procedure that wildlife officials hoped would simulate the behavior of an adult falcon feeding its young. When wildlife specialists determined that the young birds were mature enough they were released from the box.

Nationally, in recent years, the U.S. Congress has taken steps to protect endangered species like the peregrine falcon. Congress passed an Endangered Species Act in 1966 and strengthened this law in 1969 and 1973. There is a national wildlife refuge system that now covers over 32 million acres across the United States.

Despite these efforts, the list of endangered species continues to grow. In 1966 there were 78 animals on the endangered species list. By 1973 there were 109 animals. By July 31, 1977, there were 175. An endangered species is a species that is facing extinction. As part of the National Wildlife Week observance, the NWF is encouraging citizens to protect wildlife habitat, to control the use of pesticides, and to persevere in efforts to clean up the nation's waters.

For more information on National Wildlife Week, or to request a free educational kit prepared by the National Wildlife Federation, please write or call, Seward Weber, Vermont Natural Resources Council, 26 State Street, Montpelier, VT., 05602, (802) 223 2328, or get in touch with George Tanner, State Department of Education, Montpelier, VT., 05602, (802) 828 3111.

Wood Chip Harvesting at South Duxbury: These Are the Interim Findings

David Stevens, a forestry utilization specialist with the Vermont Department of Forests & Parks, and Darby Bradley, VNRC Staff Attorney and a member of the (State) Forest Resources Advisory Council (FRAC), have recently completed an interim report on the whole tree chip harvesting experiment that took place last summer and fall at South Duxbury, about seven miles south of Waterbury.

The 25-page report supplies a short history of the South Duxbury experiment and then goes on to sum up the problems, opportunities and possible environmental impacts that might be expected from the application of whole tree harvesting techniques to Vermont's woodlands.

(1.) An Interim Report

In what they call **Wood For Energy: An Interim Report**, the authors tell us that the South Duxbury operation was exactly what it was billed to be -- an experiment.

The equipment was new, the crews were unfamiliar with it, there were mechanical breakdowns, there were difficulties in coordinating the felling of trees in the woods with the chipping of trees at the landing site, with the hauling of wood chips to Waterbury State Hospital where they are being burned to produce heat.

Then there was rain, lots of it -- rain that first complicated and then finally shut down the operation in the woods altogether on September 30.

Because of these circumstances, the whole tree harvesting project at South Duxbury fell far short of its goal. Out of a projected harvest of some 68.5 acres, only 16 acres (or 20%) were actually cut. Of these 16 acres, 8.5 were in clearcut (100% removal), 6.5 were in heavy selection (50% removal), and one acre was in shelterwood cut (60-70% removal).

Given these results, it is hardly surprising to learn that the South Duxbury project will be completed in the summer of 1978. Nor is it surprising to be warned that the observations and conclusions arising out of the summer and fall 1977 South Duxbury experiment are of an **interim** nature only.

(2.) The Harvest Operation

The authors were emphatic about the potential of the new machines (the feller buncher, grapple skidder, and the whole tree harvester). They say, "The productive capabilities of the equipment were impressive. When everything ran smoothly, a large amount of material could be harvested and delivered within a short time." The problem with the operation is that everything did NOT move

smoothly and the authors of the **Interim Report** are constrained to say that an effective woods operation will depend on what they call a "substantial support system." They mean skilled mechanics and spare parts when there are breakdowns and other equipment to replace equipment that may be temporarily idled. All of this, of course, means a greater capital outlay.

(3.) Yields

Yields from the South Duxbury operation were surprisingly high, ranging from 2 to 3½ times above what had been predicted in pre-harvest inventories. The suggestion is clear. Bradley and Stevens write that current inventory methods for estimating biomass seem incapable of accurately predicting yields from whole tree harvesting. The authors conclude that new methods of estimating biomass will have to be developed.

(4.) Environmental Impacts

"Too small an area was harvested and too little time has passed since the logging ended," write Bradley and Stevens. This makes it impossible to draw firm conclusions about the environmental impacts of the experiment.

With this cautionary note, the writers go on to make a few preliminary observations.

In the clearcut area nearly the whole surface of the ground was stirred up by the logging operation. Bradley and Stevens point out that this disturbance of ground cover is expected to provide a favorable seed bed for regeneration. There was little "severe rutting" in the clearcut area from the impact of heavy machines.

In the selection cut area there was less general disturbance of the ground cover. But the evidence of rutting was more pronounced because skidders tended to follow the same routes more consistently.

cont.

wood chip harvesting...

The authors of the **Report** express concern about the significant number of residual trees in the selection site area that show marks and scars from the skidding operation. This scarring could provide entry for infection, or insects, and this kind of damage would almost certainly be a concern of landowners. The authors call for efforts to reduce this kind of damage.

(5.) Cost of Wood Chips

The State of Vermont paid \$16.00 per ton for chips delivered to a storage site at Waterbury State Hospital. This appears to be slightly higher than the current market price. In October 1977, the Burlington Electric Department began purchasing wood chips to fire an electric generator. Burlington Electric paid \$13.50 per ton. In their report, Bradley and Stevens emphasize that the \$16.00 and \$13.50 figures do not include the cost of unloading chips and handling them at the point of delivery. At Waterbury and Burlington, these tasks were performed by crews of the State Hospital and the Electric Department respectively.

(6.) Financial Returns to the Landowner

Ward Lumber Company, owner of the experimental site at South Duxbury, received 80 cents for each ton of wood chips that was harvested. When the project closed down for the season on September 30, 1,336 tons of wood chips had been delivered to the State Hospital. This amounted to a financial return to Ward Lumber Company of \$1,068, hardly a bonanza. Bradley and Stevens are quick to point out, however, the benefits that resulted from the operation. The South Duxbury operation would never have supported a conventional logging operation. So the owner was in a position of having received a small return while having the advantage of being able to improve his woodlot. Certainly if the owner had tried to improve his woodlot on his own without the new equipment, he would have been spending money without taking anything in for his pains.

Bradley and Stevens call attention to the problem of feeding merchantable sawlogs through the whole tree chipper. This happened a number of times at South Duxbury by mistake. A merchantable sawlog has far greater value than the chipped wood that can be made from it. Landowners, foresters, sawmill operators have all expressed concern that the indiscriminate application of whole tree harvesting techniques to the Vermont forest resource might result in chewing up valuable sawlogs. Bradley and Stevens think this fear is real and feel it is a problem that will have to be addressed.

(7.) Capital Costs

The authors discuss the fact that whole tree harvesting carries a high capital investment.

A "Morbark Model 12" chipper costs up to \$45,000. The "Model 22" chipper ranges in cost up to \$150,000. Purchasing machinery of this kind may be beyond the means of many Vermont loggers. The authors in their report raise the hope that through the use of concentration yards and other methods of stockpiling trees that would eventually be chipped by mobile chippers -- many Vermont crews will be able to participate in the work of supplying wood chips for energy.

(8.) Handling of Wood Chips

Unloading and handling wood chips was a major problem encountered at the delivery point in Waterbury.

Unloading equipment is available that can unload 25 tons from a van in 20 minutes. The problem is that this is sophisticated machinery and it is expensive. The cost? \$45,000 and up. This cost was prohibitive at Waterbury State Hospital where the demand for wood chips was no more than an average of two truckloads per day. The authors conclude, "Advances must be made in the handling equipment for small and medium users before such users can be expected to enter the wood-energy market."

One of the more promising developments that may ease the problems presently being encountered with handling wood chips is the experimentation that is going on with reducing the size of wood chips by making them into pellets. Wood pellets look like dry dog chow. They have approximately one-third the volume of wood chips and they are uniform in size. Once the wood is "pelletized" it can be handled pneumatically in the same way that feed stores handle grain for farmers.

(9.) The Future of Wood Energy in Vermont

"Developments in the wood-energy field are moving with dizzying speed." This is what Stevens and Bradley say in their concluding remarks.

The authors are referring to developments such as these:

- A bond vote in Burlington scheduled for March 1978 to see if the voters will finance the construction of a 50-megawatt wood-fired electrical generating plant;
- The experiments of the Vermont Wood Energy Corporation in Stowe to develop a small furnace that would burn wood chips or wood pellets in a gasification process;
- Federal funding in Maine for the development and construction of a 50-megawatt electrical generating plant fired by wood.

cont...

harvesting...

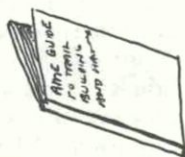
The South Duxbury project is just one of these developments. It would appear to be unique because it is the only effort in the country to evaluate the impact of whole tree harvesting on the forest resource.

Looking ahead to the future use of wood for energy, Bradley and Stevens raise two potentially troubling questions. They ask, "How can the State of Vermont ensure that the wood will be harvested in an environmentally sound manner?" The authors are concerned about the severe impacts that would result if the logger was not

sensitive to environmental and aesthetic values, as well as to the limitations of the resource.

Their second question addresses the need to formulate a forest policy to protect the legitimate interests of the State. The forest resource is renewable. There is no question on that point. But it is also limited. Who, the authors ask, will arbitrate between the claims of competing uses? Who will say that the forest resource should be used for making electricity, or as fuelwood for home heating, or as wood for manufacturing, or as the raw material for lumber mills? And what part of the resource should simply be left alone for people to enjoy as it is?

BOOKS SKOOP BOOKS SKOOP BOOKS SKOOP



THE END OF THE ROAD, A Citizen's Guide to Transportation Problemsolving, published by the National Wildlife Federation and Environmental Action Foundation, Inc.

The End of the Road is a citizen's guide through the thicket of highway planning and offers a way out of the apparently never-ending forest of more roads, more noise, more pollution, and more energy waste. **End of the Road** is in three parts. Part One is an examination of our present transportation system, what it promises, what it really costs both in dollars and in the loss of amenities, and the difficulty of mounting effective opposition to the highway juggernaut. Part Two focuses on the alternatives to the single-passenger automobile: buses, taxis, jitneys, bicycles, passenger trains. It discusses land use planning and the financing of public transport systems. Part Three is about opposition. How should the citizen organize, follow a highway project, and seize the crucial pressure points between a plan and eventual construction. Former EPA Administrator Russell E. Train says about this book: "In a nation where the transportation sector accounts for 60% of annual petroleum use and is a primary contributor to the waste of our air, water, land and natural resources, basic reform is clearly required. This book explains your role in that reform."

(Paperback, 159 pages, available from the National Wildlife Federation, 1412 16th Street, Washington, D.C., 20036, \$3.50.)

AMC FIELD GUIDE TO TRAIL BUILDING & MAINTENANCE by Robert D. Proudman

In 1965 the Appalachian Mountain Club (AMC) spent \$10,000 on trail building and maintenance. Ten years later the Club spent \$100,000 for the same purpose. This ten-fold jump in spending parallels the enormous increase in hiking over certain sections of the trail over the past ten years. It also describes the impacts that unprecedented numbers of visitors have had on the "physical ability of soils and plantlife to remain healthy and stable under the pressure of great volumes of traffic." Now AMC's trail supervisor, Robert D. Proudman, has written a detailed set of instructions that takes the trail builder out onto the trail and prepares the trail crew to sort out the problems of building and maintaining trails intelligently. Proudman starts at the beginning with trail design, environmental considerations, trail layout, and goes on to trail clearing, trail marking, trail reconstruction, erosion control, and hardening trails in wet areas. He leaves the trail builder with his tools and instructions about where to buy them, how to care for them and how to use them. The **AMC Field Guide** is a tribute to common sense. It is punctuated throughout with line drawings and photographs. It is a book that tells how, shows how, and that says something about the seriousness of the hiking fraternity, a body of people who recognize that trails, like other natural things, are fragile, and that trails will exist only so long as they are understood, cared for, and well managed.

(Paperback, 193 pages, available from the Green Mountain Club, P. O. Box 889, Montpelier, Vt., 05602, \$4.95, plus 30 cents postage.)

MARVIN AWARD ESTABLISHED

Dr. H.W. Vogelmann, Chairman of the Botany Department at the University of Vermont (UVM), has announced the establishment of a "James W. Marvin Award in Science & Conservation."

Dr. James Marvin died on December 26, 1977. Over the years he made a distinguished contribution to botany, maple research and environmental conservation. The award in his name will be given annually to a person, organization or cause in Vermont that best symbolizes or promotes the kinds of interests and activities that played so large a part in Dr. Marvin's life.

A committee is being formed consisting of one member each from the UVM Botany Department, the Vermont Maple Industry, the Vermont Natural Resources Council, the State Environmental Board, and the Vermont Chapter of The Nature Conservancy. This committee represents organizations in which Dr. Marvin was an active participant and it will determine the exact nature of the award.

Dr. "Hub" Vogelmann is inviting contributions to a "James W. Marvin Fund" from those who knew Dr. Marvin or from members of the public who simply admired his work, appreciated his efforts in behalf of conservation, and who would like to join in a tribute to him.

The "James W. Marvin Fund" will supply money to support the Marvin Award and to place a plaque in Dr. Marvin's honor at the site of the experimental maple stand at the Proctor Maple Research Farm.

Anyone wishing to make a contribution to the Fund that is being established should make a check payable to "James W. Marvin Fund, University of Vermont" and send the contribution to: Dr. H.W. Vogelmann, Botany Department, Marsh Life Science Building, University of Vermont, Burlington, VT., 05401.

Letters

To the Editor:

I have a nagging worry that we have accepted the notion that we must find a Vermont job for every Vermont child, now and forever.

I think this attitude is wrong for several reasons. It could cause damage to our only natural asset, — a fine human habitat. This habitat can easily be destroyed if, in an excess of zeal to provide jobs, we sell our birthright for the traditional mess of pottage.

I find nothing wrong in the idea of exporting our young people. Holland and Scotland have done this successfully for generations.

We must give our children the opportunity to expand their mental horizons by emigrating to other parts of the world where they will see different modes of life, have valuable new experiences, and compete with other young people in a new context. Properly equipped in mind and body, they will prosper; their imaginations and minds will be enlarged. They will become stronger and more productive.

Many will choose to return to Vermont bringing with them their new skills.

If, however, we try to keep our young people in the State, how do we keep them from becoming ingrown and parochial? How do we keep them from being narrow, bigoted and frustrated by outside challenge? And, if we alter or destroy in the process of trying to provide jobs at any cost, what good is that to them or anyone else?

Let us strive for better education of both mind and body and let us give our young people the chance to live bold, active and productive lives.

Richard M. Brett
Woodstock

EDITOR'S NOTE: Over the past few months, the Media Advisory Committee of the VNRC Board of Directors has been considering ways to strengthen the Vermont Environmental Report (VER). The Media Committee would like to see the VER broaden its coverage of environmental news. The Committee would like the publication to develop a stronger editorial voice. The Committee wants to open up the publication to a wider range of ideas and points of view. Finally, the Committee wants to encourage greater reader response. Over the next 12 to 15 months the VER will evolve in these and other new directions. The change will be gradual and we shall be experimenting with new ways of presenting and interpreting the environment in Vermont.

VNRC Applauds Fish & Game Decision

Editor's Note

In the January VER, we printed a story about the Fish & Game Board decision to permit a limited season on the bobcat during 1978.

For the purposes of clarification, -- these points need to be made.

What we should have emphasized is that it was the State's hunters out of a concern to protect the bobcat who first approached the Fish & Game Board to ask for a reduced season on the bobcat in 1978.

The Fish & Game Board responded by suggesting that the bobcat season be closed entirely in 1978. The Board's reasoning was that by closing the season the decline of bobcat numbers could be halted.

Sportsmen, and biologists within the Fish & Game Department, disagreed with this proposal. Biologists felt

that no one really knew whether bobcat populations were declining, increasing, or stable in Vermont. Furthermore, if the status of the bobcat in Vermont is to be determined, biologists will need carcasses to study the age and sex composition of the animal. Biologists and hunters argued that a limited hunting season would be the best way to obtain these carcasses.

Now the Fish & Game Board has decided to permit a limited bobcat season in Vermont during 1978. This limited season will enable the Fish & Game Department to come up with better data on the bobcat than if the season had been closed completely.

The Vermont Natural Resources Council has traditionally taken the position that natural resources, including wildlife, should be managed on the basis of valid scientific evidence. We therefore applaud the Fish & Game Board decision.

VNRC

Non-Profit Org.
U.S. Postage
PAID
Montpelier, VT;
Permit No. 285

THIS ISSUE FEBRUARY • 1978 No.72

Contents

- 1977 Clean Water Act Will Change Rules
- Interim Report on Wood Chip Harvesting
- National Wildlife Week To Be Held in March
- Books - Seminars - Awards

ADDRESS CORRECTION REQUESTED

VERMONT NATURAL RESOURCES COUNCIL, 26 STATE STREET, MONTPELIER, VERMONT