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The Cover

Don Mock, owner of Shamrock sprays freeway right-of-way near Seattle, Wash. This

type contract accounts for a large share of his business and his equipment is customized to do this specific job. For more about Mock and his operation, see page 6.

Michigan State Expands Park/Recreation Program

Michigan State University recently announced the creation of a Department of Park and Recreation Resources in its College of Agriculture and Natural Resources.

The new department is intended to prepare students for career positions in parks and recreation at state, federal and local levels of government. Its doctorate program will emphasize preparation for careers as researchers and college-level instructors.

Prior to his appointment as head of the newly created department, Professor Louis F. Twardzik was an associate professor in the university's Department of Resource Development and recreation specialist for the Cooperative Extension Service. Twardzik is the author of a book entitled "The Park and Recreation Commissioner" plus numerous papers on various subjects in his field.

"Current research projects are funded by state and federal agencies, and are expected to increase because of the demand for additional park areas and recreational opportunities in Michigan and throughout the nation," he noted. "The recently approved \$100 million state bond issue (Michigan) for recreation is just one indication of this demand."

WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

April 1969

Volume 8, No. 4

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We have the highest regard for the U. S. Fish and Wildlife Service and for the various State wildlife agencies. But we hardly think they are the agencies of government to pass on government help and money in all areas of pesticide application.

Yet that's exactly what House Bill 1059, now pending as legislation in Congress, proposes. Section 2 of this bill states: "No officer or agency of the Federal Government shall initiate or provide any financial or other assistance for any program involving the use of any chemical insecticide, herbicide, fungicide, rodenticide, or other chemical for the purpose of eradicating or controlling animal or plant pests until such officer or agency has consulted with the United States Fish and Wildlife Service, and through such Service, with the head of the agency exercising administration over the wildlife resources of each State to be affected by the program."

We would ask Congressmen Dingell and Karth who are co-sponsoring this bill: Does this mean monies which the Department of Agriculture spends directly and through the state Land Grant Universities on pesticide research and publication of results? Does this apply to monies spent by the Department of Health, Education and Wel-

fare on research and testing programs? Where does it fit into the regulatory programs now in existence? Does a researcher of the Federal Government—in all except the Fish and Wildlife Service—have to check with the Federal Fish and Wildlife people (and let's not forget the kicker regarding State agency clearance also) before he can make pesticide recommendations at an industry conference?

These are only a few questions which come to mind. No mention has been made of the vast Federal pest control programs.

The point is simply that this bill needs to be defeated. True, more coordination may be needed in government. But this particular bill borders on the ridiculous.

Pending legislation such as this is in the same vein as the DDT legislative proposals now being bandied about in a number of our state legislatures and which we discussed last month. To digress only slightly, one of these proposes to limit the use of all chlorinated hydrocarbons to the practice of veterinary medicine and research.

Legislation affecting the industry needs careful consideration on other than an emotional basis and by knowledgeable and qualified persons. We urge each of you to visit with your own congressmen. And don't neglect your state legislators.

May

WEED & BRUSH CONTROL PLANNER



Timing Is Everything

May is the time to take care of hard to get at brush problems. Aerially applied chemicals can clean up problems in otherwise inaccessible terrain. It is the most economical and efficient way to get rid of brush along distribution lines or where spray trains cannot reach far enough. But aerial application works only if the spray is accurate—and if the chemicals are effective.

What to Use in May

To get a thorough kill of conifers and oaks use Brushkiller 170 plus Trans-Vert.[®] For mixed brush, particularly such hard-to-kill species as maple, use Industrial Brushkiller plus Trans-Vert. Adding Trans-Vert increases translocation to the roots. Result: less sprouting, better kill.

Use the Microfoil[®]

Aerial sprays that miss the target are expensive, inefficient and dangerous. The Microfoil Boom, developed by Amchem, is aerodynamically designed to control chemical drift. Attached to a helicopter it puts chemicals only where you want them. Test after test has shown that the Microfoil eliminates fines and gives uniform drops—on target. Accurate spraying is not the only economy. With the Microfoil you don't use thickened, inverted or particulated sprays, and thus save money on these additives. Uniform droplets mean reduced volume, too. Ask your Amchem representative for a free brochure on the Microfoil. Do it now.

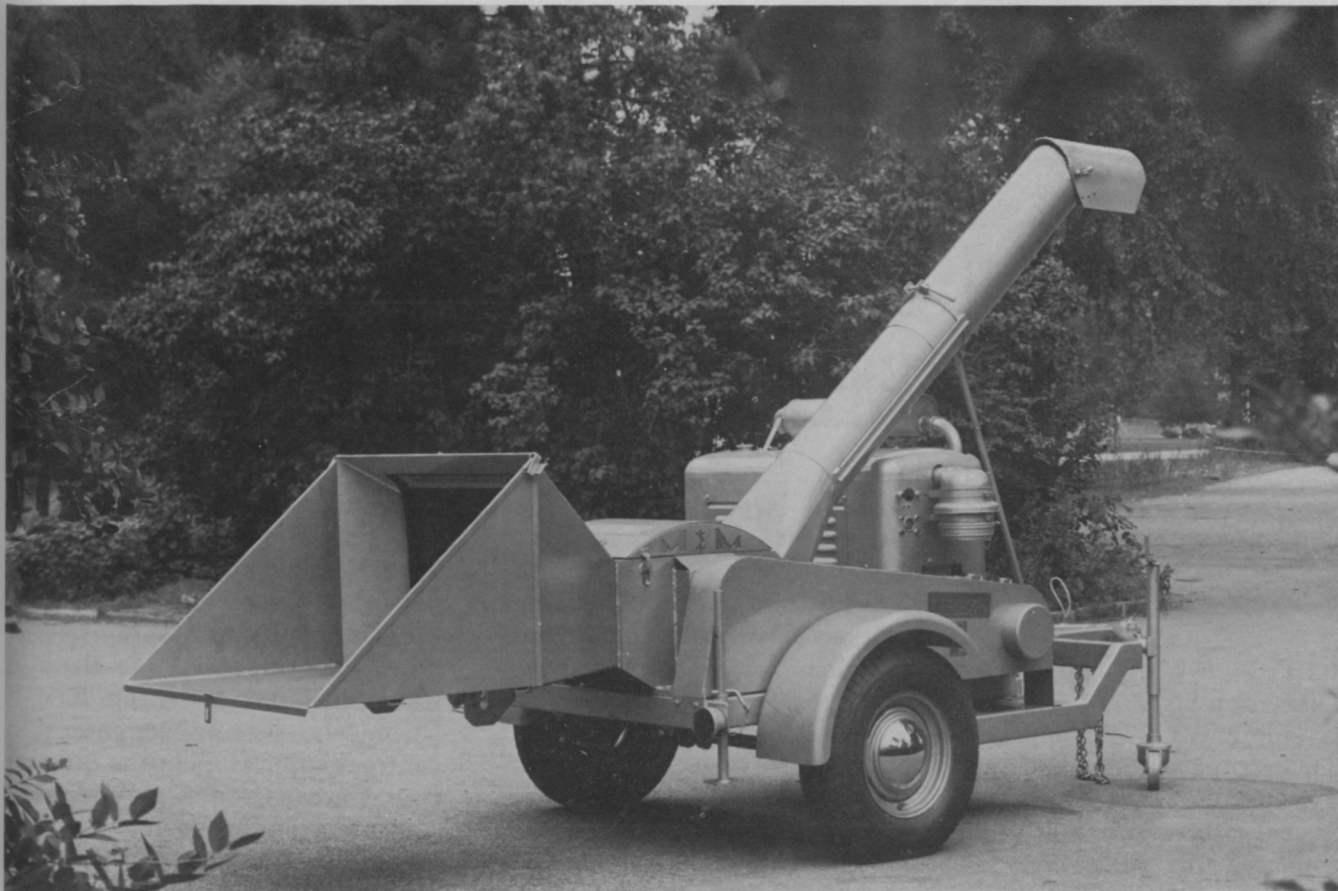
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HIGHWAY RIGHTS-OF-WAY WEED CONTROL

RIGHTS-OF-WAY spraying utilizes a big share of chemicals, equipment, and manpower in non-crop pesticide application today.

Typical of contract applicators who handle this job nationwide is Don Mock, owner of Shamrock Spray Service at Seattle, Wash. Mock owns two custom spray trucks and is equipped for all types of ground spray service.

One truck has three tanks, ranging from 800 gallons to 300 gallons in capacity. Each tank is used for one specific type of chemical to facilitate cleaning and eliminate contamination when switching from herbicides to insecticides. On his 3-tank truck, one tank is used only for a bare ground type herbicide, one for insecticides, and one for a selective herbicide. Each tank has its own pump and hose accessories.

The truck being used for highway rights-of-way spraying and pictured on this month's WTT cover is equipped with a modified Royal Bean dual side contourmatic 24' boom. Mock gets a full 55 feet of swath by using a broadcast tip.

Mock has also purchased a Cushman Truckster now equipped with tank, pump and booms for use on large turf areas and off highway use. He thus has

both the largest to the smallest equipment commonly in use today.

Until four years ago, Mock worked for another area applicator, doing ornamental and general pesticide application. He went into business for himself, and began specializing in contract work, primarily weed control in ornamental plantings on area highways. He uses four employees during the busy season and after only a few years in business, finds it difficult to keep up with the demand for service.

One of his summer employees is his 18-year-old son, Randy. Randy will graduate from high

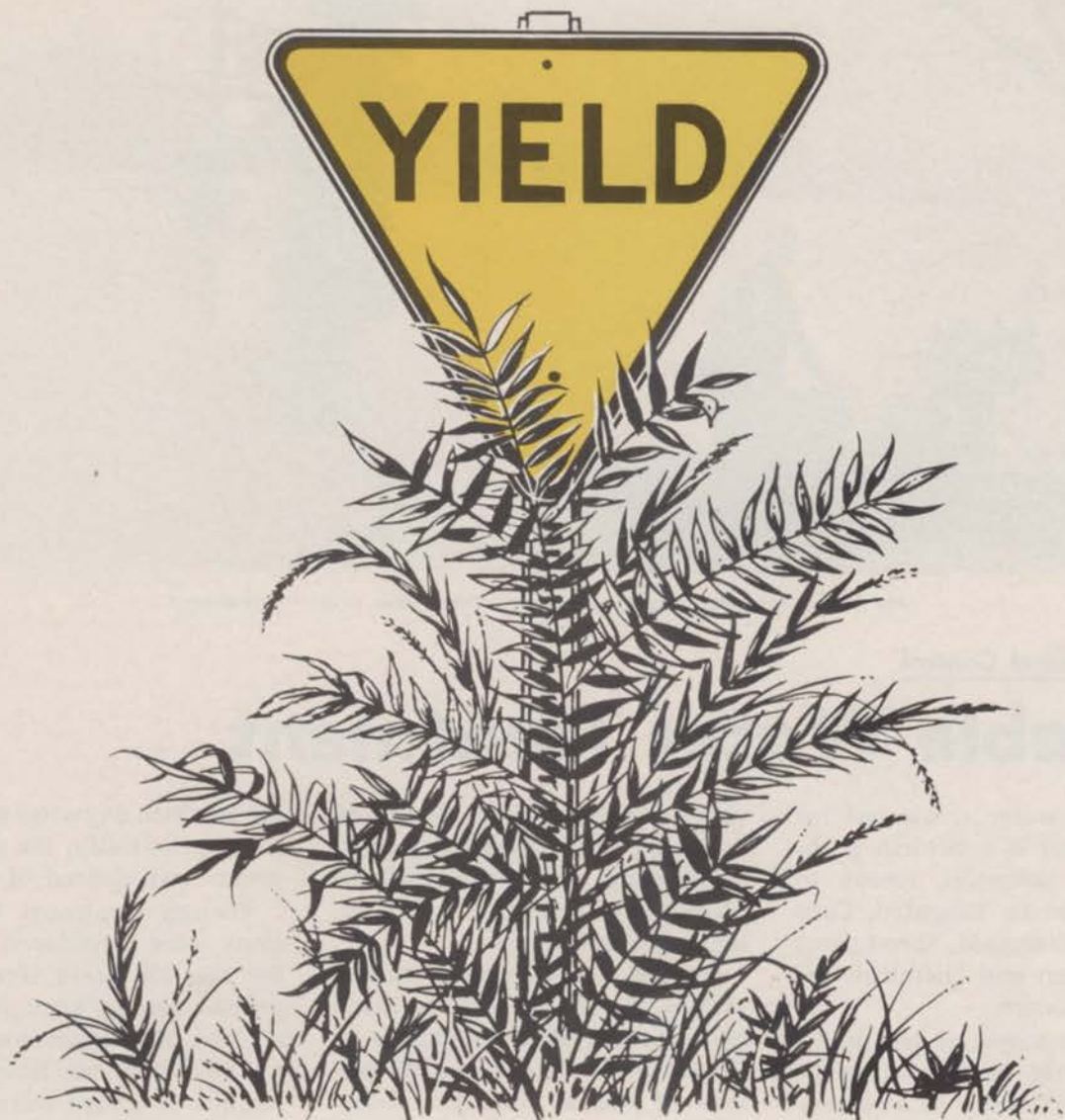
school this June and plans a college career to better prepare himself to become a permanent part of the business.

Besides running a spray business, Mock also serves as a chemical distributor for Crop King Chemicals, serving commercial contract applicators in the Puget Sound area. Crop King specializes in custom packaging of custom mixes of pesticides.

He is also active in the Northwest Spraymen Association, being a past secretary-treasurer. Right now, Mock is serving as president of the Washington Association of Ground Sprayers, Inc.

Don Mock, left, always an active participant in the Pacific Northwest Spraymen Association and past secretary-treasurer, discusses industry with T. P. Strand, Weaver Exterminating Co., Yakima, Wash., center, and Thomas E. Cowan, Uniroyal technical representative, Los Angeles, Calif., at an association annual meeting.





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Not to broad-leaved weeds and brush, not to weather inconsistencies that bar normal spray activities . . . nor to run-away labor and equipment costs. Be aggressive. Attack with controllable Visko-Rhap* invert herbicides that resist drift and wash-off, allowing you to stay on top of your weed and brush problems. Visko-Rhap herbicides are special formulations of 2,4-D, 2,4,5-T, and Silvex that are applied to broadleaves and brush in thick, controllable streams that break up into heavy oil-coated droplets before contact. They hit and stick where you want them to. These large, heavy droplets afford you precise control of herbicide drift,

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Because Visko-Rhap requires no pre-mixing operation, there is no chemical waste. Your trucks will spend more time on the highways than in refilling, since generally less water is used per acre. A matter of economics that you cannot ignore.

We'd like to talk to you about Visko-Rhap in your spray program. Information and technical assistance is available from any of the offices listed below. Or, write Agricultural Chemicals, Synthetics Department, Hercules Incorporated, Wilmington, Delaware 19899.



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Art Barret, left, and Raymond Corning check lake prior to treatment.

Aquatic Weed Control

Potable Water Treatment

Portable water treatment for weed control is a ticklish problem. Any potential threat to users cannot be tolerated. Care must be exercised throughout the operation and chemicals selected with care.

A good example of treating a reservoir 1100 surface acres in size, used primarily as a recreation area and ultimately as a city water supply, is the Chickahominy Reservoir. Located in the lowlands of Virginia, it eventually provides water for both Newport News and Williamsburg.

Treatment was made to control elodea and open fishing lanes. The Virginia Commission of Game & Inland Fisheries was in charge of the technical op-

eration. Directing the work and assessing results were Raymond V. Corning, supervising fish biologist, and Norville S. Prosser, district fish biologist.

Results far exceeded expectations. Some 200 surface acres were treated with 150 gallons of Potassium Endothal and 165 gallons of Diquat during a 3-day treatment period. An airboat with above water boom was used to apply the herbicides.

A strip treatment on 200 acres actually freed almost 900 surface acres of elodea infestation. Chemical applied at a combined rate of 1½ gallons per surface acre reduced infestation to the point that boats were able to operate in major fishing lanes within 11 days after application.

By the 34th day after final treatment practically, the entire reservoir was cleared of elodea.

Though treatment concentrations were considered low even for the 200 acres treated, they proved strong enough to clear all but the uppermost reaches of the 1100 acres. However, live strands of elodea were found in practically all areas of treated sections. These lead Corning and Prosser to believe that growth may return to former levels within about two years, unless phytoplankton populations are able to keep regrowth down by shading. Thus, retreatment may likely be necessary.

Population Expansion

More people building homes in the upper reaches of the Chickahominy River drainage area led to a nutrient buildup in the reservoir. Adding to this were increased recreational use of the reservoir itself. Brazilian waterweed or true elodea (*Egeria densa*) became established. At the time of treatment, practically all portions with water 12 feet or more in depth were infested. Heavy growths of elodea pre-

In Brief:

Data for this report on potable water treatment was supplied by Raymond V. Corning, Supervising Fish Biologist and Norville S. Prosser, District Fish Biologist, Virginia Commission of Game and Inland Fisheries. The entire report will appear in the current Hyacinth Control Journal. For more specific details on both treatment and findings, the Journal may be purchased from the Hyacinth Control Society, P.O. Box 9087, Fort Lauderdale, Fla. 33310. Attention: Dr. Lyle Weldon.

Send us your lake and we'll tell you how to weed it!

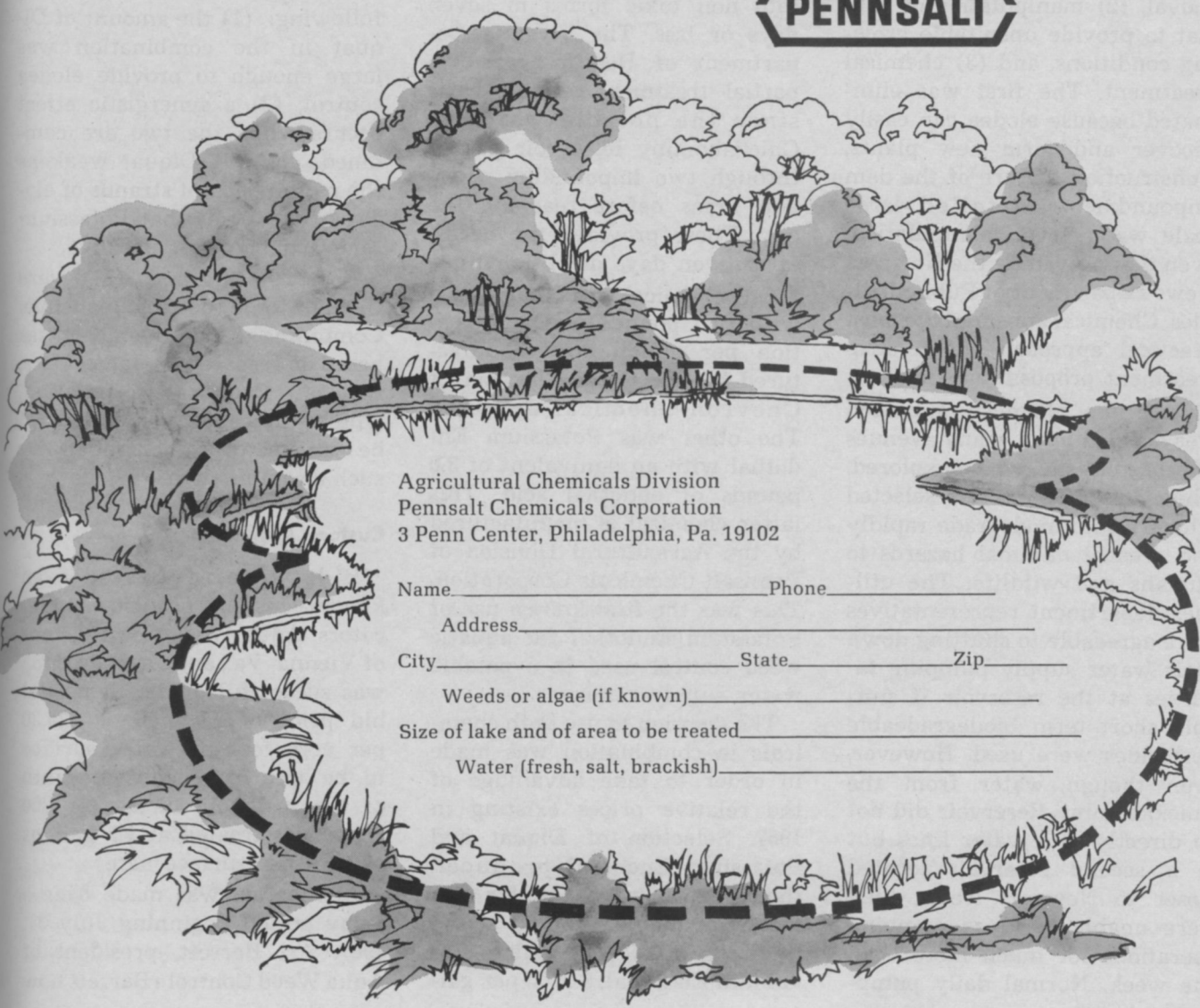
Whatever size (or kind) of lake or pond you've got, we've got a way to weed it. We have the know-how, the chemicals and, if needed, the applying service to kill the weeds but keep the fish.

And we've got aquatic weed specialists standing by to help.

In case you don't know us (that's possible!)

. . . we've pioneered in the development of weed control chemicals, and are leaders in applying service nationwide. That should qualify us!

To get the help you need, just fill out the coupon below with the kind of weeds that trouble you. And the kind and size of your troubled lake.



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Pennsalt Chemicals Corporation
3 Penn Center, Philadelphia, Pa. 19102

Name _____ Phone _____

Address _____

City _____ State _____ Zip _____

Weeds or algae (if known) _____

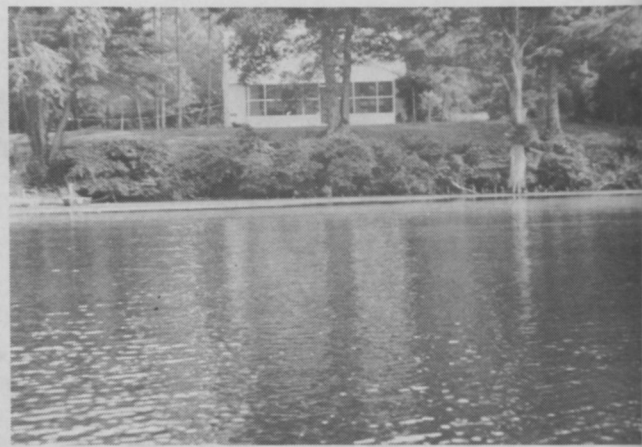
Size of lake and of area to be treated _____

Water (fresh, salt, brackish) _____

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Before: heavy infestation of elodea.



After: same area one month later.

vented motor boat usage on side streams, coves and along shorelines during most of the summer months.

Studies were made by the Commission to determine one of three approaches to the problem of opening the lake. Corning lists these as (1) mechanical removal, (2) manipulation of habitat to provide unsuitable growing conditions, and (3) chemical treatment. The first was eliminated because elodea can easily recover and form new plants. Construction feature of the dam impoundment curtailed large scale water level manipulation, even if approved by the Newport News Department of Public Utilities. Chemical appeared the most practical approach and a strip treatment proposal was made.

Once the chemical approach was decided upon, many avenues of procedures had to be explored. Chemicals had to be selected which would biodegrade rapidly and present minimal hazards to humans and wildlife. The utilities department representatives were agreeable to shutting down their water supply pumping facilities at the reservoir if suitable short term biodegradeable herbicides were used. However, even though water from the Chickahominy Reservoir did not go directly into water lines but to a second reservoir located closer to Newport News, they were unable to cease pumping operations for much more than one week. Normal daily pump-

ing rate is approximately 22 million gallons. Prolonged stoppage of pumping would have caused dangerously low water supplies.

Two Chemicals Used

Two chemicals were selected, both of which according to tests and labels would break down into non toxic forms in seven days or less. The Virginia Department of Health agreed to partial treatment on this basis since the potable water in Chickahominy Reservoir passed through two impounding reservoir areas before reaching the city. These provided the necessary seven days detention time.

One chemical was Diquat used with two pounds of Diquat cation per gallon and manufactured by the Ortho Division of Chevron Chemical Company. The other was Potassium Endothal with an equivalent of 3.0 pounds of endothal acid. This latter chemical is manufactured by the Agricultural Division of Pennsalt Chemicals Corporation. This was the first known use of Potassium Endothal for aquatic weed control used in a potable water supply reservoir.

The decision to use both chemicals in combination was made in order to take advantage of the relative prices existing in 1967. Selection of Diquat and Potassium Endothal produced the greatest coverage for the money available. (Diquat at the time was \$32.50 per gallon. Potassium Endothal, \$16.00 per gal-

lon.) Diquat is a systemic weed killer, and Potassium Endothal a contact type. Killing action of Potassium Endothal is relatively slow and long exposure or usage in non flowing water is recommended.

Controlling characteristics of the two chemicals in combination were due to one or more of the following: (1) the amount of Diquat in the combination was large enough to provide elodea control, (2) a synergistic effect occurs when the two are combined, and (3) Diquat weakens the more resistant strands of elodea to the point that Potassium Endothal becomes effective.

Reasons (2) and (3) were thought to be the most plausible. Combining of two chemicals was based on research by James Parr, Pennsalt Chemical Corporation, which indicated elodea would be satisfactorily controlled by such a combination.

Custom Application

Bids were requested from known custom pesticide applicators. Aqua Weed Control, Inc., of Vienna, Va., and Orlando, Fla., was successful bidder at a total bid price of \$4877.50 or \$25.20 per acre foot of water surface to be treated. About one-sixth of the reservoir surface or 200 acres was treated at 1.5 gallons of mix per surface acre.

Application was made over a 4-day period beginning July 31, 1967. Art Barrett, president of Aqua Weed Control (Barrett now