Herbicides Keep Jacksonville Drainage Ditches Open

By C. C. HOLBROOK
Division Superintendent, Streets & Highways
City of Jacksonville, Florida

IMPROVED maintenance of over over 4000 miles of drainage ditches with no increase in cost to the taxpayer has been the objective of a new weed control program initiated a year and a half ago by the City of Jacksonville. Now with two growing seasons behind us on our new program, we know we can accomplish this goal, without any increase in our manpower requirements.

It has not been a case of getting our men to work harder; it's really been a case of upgrading manpower skills and teaching our crews to be more effective, And the new ingredient we have introduced is the concept of safe chemical weed and brush control. Our basic material used to date has been Ammate X weed killer — a safe compound that can be applied to growing vegetation for seven or eight months out of the year in our area.

Where once we depended almost entirely on mechanical cutting or hand trimming of weeds and brush in our drainage ditches, now we have successfully switched to chemicals as a prime tool for keeping the ditches free of dense growth. This growth has always been a problem for us. It contributes to flooding in wet, rainy weather, it harbors pests, rodents and snakes almost all year round. But we have learned that chemical weed and brush control can open a new dimension for us in economic ditch maintenance.

Jacksonville is recognized as the largest city in the U.S. with 850 square miles inside the city limits. A number of factors, aside from size, tend to complicate normal surface drainage problems. On the one hand, we have heavy annual rainfall — more than 53 inches in an average year — and at least part of this is likely to come in severe tropical storms. We have an unusualy long growing season — the active period is about ten months. We have a high water table and essentially flat terrain. As a consequence the city has developed an extensive system of drainage ditches to prevent flooding and damage to grounds, buildings and household goods. Without the ditches, water damage would run into the millions of dollars — even in a moderately heavy storm.

(continued on page 42)

Clean main ditch has been kept free of brush by application of Ammate X two months after dragline operation. The ditch bottom, slopes and berm were sprayed. Dead vegetation has been removed allowing good water flow. Mowing will permit grasses to thrive on slopes and berms.

HERBICIDES *(from page 16)*

In downtown areas we have some lined ditches plus an underground storm drain system, but elsewhere in the city most of the ditches are open and unlined. The average ditch is 10 feet deep and about 10 feet wide with a 1½:1 slope. Some of our main ditches, however, are 20 feet or more in depth. Vegetation flourishes and can quickly crowd and overrun ditch banks, bottoms and berms.

Obviously, these drainage ditches must be kept clear to allow for a free flow of water that is carried through the system of laterals to the main ditches or canals and eventually into the St. Johns River.

Historically, the city has depended on cutting and chopping to keep weeds and brush in check. But increases in hourly wage rates ranging five and six times above levels of a decade or so ago and shortages of people interested in the hard physical labor involved in hand chopping and mechanical cutting have spurred our interest in alternate methods of keeping the ditches clean. One of the largest expense items in our maintenance budget has been ditch bank weed and brush control. It, therefore, offered real potential for operating economy — if we could demonstrate feasibility for a new approach.

Investigation showed that proper application of a safe weed and brush chemical such as Ammate X would halt weed and brush growth in the ditches. We found this non-volatile, water soluble compound could be safely used in the residential areas served by the drainage ditches, because it is low in toxicity to man and to animals. And so in 1970, we decided to move ahead with this new chemical spray program.

Initially we purchased a Myers trailer-mounted spray rig. Success with this rig encouraged us to add two John Bean truck-mounted rigs. So we now have three spray units in operation. The Myers sprayer has a 300 gallon tank while the other two rigs have 500 gallon tanks. All are equipped with 300 feet of hose. This makes it possible to reach remote areas away from roads and to operate for worthwhile periods of time without recharging.

Our vegetation problems involve the control of tall growing weeds and grasses such as giant dog fennel, ragweed, camphorweed, canegrass and coffeeweed and also control of woody plants like elderberry, wild plum and willow. When this undesirable vegetation is controlled, however, we find we can develop a useful ground cover of Bahiagrass, centipede grass and Bermudagrass. This is our ditch bank objective, for

Looking over a map of Jacksonville's drainage ditch system is C. C. Holbrook (seated), division superintendent, Streets and Highways. Behind him are (l-r) Stanley C. Abramson, technical supervisor for Southern Mill Creek Products, Inc., a chemical distributor; Cone Revels, Works Agency superintendent; W. M. Hood, supervising engineer, Streets and Highways; and F. Eugene Gonzalez, Du Pont weed specialist.

these grasses can be readily trimmed and maintained. Sometimes adjacent lot owners help with the maintenance since they are interested in a neat appearance in their neighborhood, but they can be overwhelmed and discouraged by high dense growth.

To control the ditch bank vegetation with the minimum amount of material and to eliminate any possible spray drift problems we have been using an invert emulsion. This system combines Ammate X with oil and emulsifier, so that the oil and water mix. By using one gallon of emulsifier, 14 gallons of No. 2 diesel oil and 60 pounds of Ammate X in 100 gallons of water, we obtain a thick, water-in-oil inverted emulsion.

We have three maintenance areas in the city — North, South and West — and we have a spray crew working in each of the areas during the growing season which sometimes is 10 months long. Our aim has been to cover the entire system of ditches during the course of this period. This is all the more difficult as we do not have direct access to many of the ditches and much of our material must be applied with the truck parked at a remote location. Each of the our crews, however, has averaged 900 gallons per day.

Overall, we have been able to get more effective and economical weed and brush control with these three crews on the job than we used to have when we relied entirely on chopping and cutting. For in those days we could see that two or three cuttings a year were the only way to keep vegetation down — yet it was tough hard work and we never really caught up with the job. It is significant that with the chemical program our three crews can now control weed growth and in effect handle a job that must be done, yet would not attract workers if we were still relying on cutting and chopping on the slopes. In a sense, a spray crew can do as much as 30 or more cutters and choppers.

Naturally, we still do considerable mechanical cutting of areas adjacent to the ditch banks. But the chain-link fences near housing developments make it impossible to move heavy duty cutters in close. Other ditches are not accessible to mechanical cutters. To control weeds and brush in these situations, we park a spray rig as near as possible to the ditch and use a spray gun and hose to reach vegetation areas. Good planning is vital, since it is often difficult to reach remote ditch areas from available roads or drives.

A weed abatement program such as ours can be modified to provide for longer control of unwanted vegetation. Initially, we have been concerned with stopping growth of undesirable weed and brush species.

We have not experienced any concern from the public on the chemical program but in the event any question should arise, our crews have the facts to summarize our program and emphasize its safety.

As our program develops, we can see the need for keeping our crews properly trained, so the materials they use will be correctly applied. On-the-job training is, therefore, very much in our minds.

We recognize that our ditch bank chemical program is still new — and we have much to learn. But we have been encouraged by what we have been able to do with safe, non-volatile chemicals. Our ditches look better; they will carry a greater volume of water. And we have been able to achieve the improvement without increasing costs to the taxpayer. We have had a good, positive reaction from the public. We intend to keep it that way.