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McGraw-Hill's weekly report on environmental pollution: the law, the markets, the technology **REC'D**

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**ENVIRONMENTALISTS FORM STRATEGY
FOR AMENDING HOUSE WATER BILL**

Environmentalists trying to amend House Public Works water pollution legislation on the House floor probably will concentrate on the provision that makes implementation of the 1981 deadline contingent on further approval by Congress. The Senate version of the legislation makes this deadline for "best available technology" automatic, but the House version calls for further congressional action following a National Academy of Sciences study on the cost and feasibility of the 1981 standard and the 1985 no-discharge goal (ANW, Dec. 20, p. 1). The only firm deadline in the House bill is for the 1976 "best practicable technology" standard. "In effect, the second half of the Muskie bill would be repealed," said one Washington environmental lobbyist. He added that the lack of commitment to a firm deadline is clear-cut and easy to spell out as an issue on the House floor. Since it is also considered by environmentalists as the greatest weakness in the House bill, efforts at amendment will probably concentrate on this section. There may also be an attempt at an amendment to allow EPA vetoes on individual permits, as in the Senate bill. But because of state pressure on Congressmen, this amendment does not have as good a chance of passage.

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**COURT RULES IMPACT STATEMENTS NEEDED
FOR REFUSE ACT PERMITS; TIGHTENS LAW, TOO**

The 1899 Refuse Act's usefulness as an effective enforcement tool may have been ended last week by a U.S. District court ruling in Washington, D.C. Judge Aubrey E. Robinson Jr. ruled that environmental impact statements must be prepared by the government for every permit issued under the 1899 act for discharges into navigable waterways. In addition, the judge broadened the definition of "nonnavigable" waterways and forbade outright the issuing of permits for discharges into them. The decision came on December 23, exactly one year after the Refuse Act permit program was authorized by President Nixon. Said Judge Robinson: "(the program) hinders the effectiveness of Congress to keep our waterways clean."

Judge Robinson said that although issuing a discharge permit may be construed as an action to protect the environment, no major federal activity is exempt from having to file an impact statement under the National Environmental Policy Act. The administrative burden of preparing such a statement for each of the 20,000 applications for discharge permits already filed could cripple the Refuse Act Permit Program.

What is a nonnavigable waterway? The injunction holds for discharge permits for the Grand River in Ohio—a river deep enough to be used for recreational canoeing. The historic definition of a navigable waterway is one deep enough to float a log—a draft



of no more than six inches. The suit was a class action brought by Jerome Kalur and Donald Large, acting as recreational users of the river on behalf of all recreational and conservational users. Defendants were the Corps of Engineers, Secretary of the Army and chief of the Environmental Protection Agency.

It was unknown at press time whether or not the government will appeal. Officials were worried about the implications of the ruling, but withheld comments until they could see a full copy of the decision. The ruling does appear to give Senate conferees the upper hand in their coming battle with the House over water pollution legislation. No matter how tough the Senate bill is, it would likely appear preferable to industry to the Refuse Act, as defined last week by the Washington district court.

While the federal government is almost certain to appeal, chances for a reversal do not appear good. Kalur and Large based their case on the Calvert Cliffs decision, which was handed down by the same court that would consider the case--the U.S. Court of Appeals in Washington. Further, although Judge Robinson could stay the injunction until the case is finally decided (perhaps a year from now in the U.S. Supreme Court), he is not considered likely to do so. Only 12 permits have been issued so far under the permit program. To issue more under a defective system could compound the damage.

COURT ORDERS OIL LEASE BIDS IMPOUNDED
AND NOMINAL BOND POSTED IN NEPA SUIT

The Interior Department last week received 298 sealed bids for oil and gas leases on 78 tracts in the Gulf of Mexico. The bids were impounded pending appeals by Interior of a preliminary injunction on the sale of the leases (ANN, Dec. 20, p. 5). The National Environmental Policy Act suit, brought by three environmental groups alleging that Interior prepared an inadequate impact statement for the sale, has already produced an important precedent. U.S. District Judge Charles Richey ruled that the groups did not have to post a \$2.5 million monthly bond to cover loss of interest on the \$500 million the sale is expected to generate.

Federal rules of civil procedure require a bond to be posted to cover losses by "any party who is found to have been wrongly enjoined or restrained." The environmentalists argued that having to post large bonds in government actions would sharply reduce the effectiveness of the National Environmental Policy Act. Judge Richey agreed. In asking that a \$100 bond be posted, he said "it would be a mistake to treat a revenue loss to the government the same as pecuniary damage to a private party," and that the "public interest will be far more gravely damaged" by requiring large bonds.

The ruling was not unexpected--bonds as low as a dollar have been imposed in some environmental suits--but environmentalists felt Richey's written decision created a far more solid base for doing so in the future and went beyond earlier rulings.

Under Interior's regulations, the bids will have to be returned unopened within 30 days if the Appeals court does not act. The department hopes that these internal regulations will provide some impetus for the court to hear the appeal within a week or so. The appeals court agreed to the halfway measure--allowing the sale to proceed, but impounding the bids--at the suggestion of Chevron Oil. The company, which filed as a friend of the court, said disclosure of the bids before the legality of the sale was judged could frustrate competitive bidding, since companies would know what each other bid the first time should the sale have to be repeated.

NEW SOURCE STANDARDS PUBLISHED;
EPA LISTS COST DATA

Final new source standards published last week (Federal Register, Dec. 23) followed expected lines (ANN, Dec. 20, p. 1). In addition to the major anticipated change in the measurement method for particulates, Environment Protection Agency officials cite these other changes from the standards originally proposed on August 17 (ANN, Aug. 16, p. 1).

Provisions were added to the steam generator standards to cover cases where mixed fuels are burned. In the case of sulfur dioxide, allowable emissions will be based on

the predominant fuel and the total heat output. EPA says this will allow the option of burning low-sulfur fuels, such as natural gas, when possible.

* Steam generators fired with lignite have been exempted from the nitrogen oxides limit because--according to EPA--of the lack of information on this emission problem.

EPA officials also offered cost estimates of adding the required control equipment. The cost comparisons are between plants meeting the standards and totally uncontrolled plants. Industry cost estimates are generally higher especially for long-term operation and maintenance. Here are the EPA cost estimates by class of source:

* A 600-megawatt coal-burning steam generator would cost about \$120 million uncontrolled. The control equipment would add about \$18 million to the cost and \$1 a month to the average home power bill. Additional operating costs and amortization would be \$5 million a year.

* A typical 200-tons-per-day municipal incinerator would cost \$1.6 million, the control equipment, \$200,000. Additional operating costs would be \$50,000 a year. This would add \$1 a ton to the present \$8 cost or about \$1 a year per citizen served.

* A Portland cement plant of 2.5 million barrels a year would cost \$16 million uncontrolled, and the control equipment would cost \$700,000. This would add a maximum 5% to the current \$3 per barrel cost, although operating and amortization would be \$250,000 a year.

* A 100,000-ton-per-year nitric acid plant would cost \$2.5 million uncontrolled, and control equipment would cost about \$200,000, with operating costs and amortization \$90,000 annually. This would add about 1% to the current \$100-per-ton cost.

* A 250,000-ton-per-year sulfuric acid plant would cost \$3 million uncontrolled, and control equipment would cost about \$900,000, EPA says. This would add a maximum 5% to the \$30-a-ton cost. Operating and amortization costs of \$240,000 per year would be offset in large part by resource recovery.

EPA officials also say they expect during 1972 to promulgate standards for 15 to 20 additional types of new sources. Among those expected to be included are: sewage sludge incinerators, iron and steel industry plants, pulp and paper plants, fertilizer plants, oil refineries, asphalt batching plants, small steam-generator powerplants, secondary lead smelters, brass and bronze smelters and rendering plants.

PROPOSAL WOULD TIGHTEN

WATER FINANCING RULES

The financial groundrules for new water-resource projects would be considerably toughened under regulations proposed last week (Federal Register, Dec. 21). Most important change: The interest charges used by water development agencies to reckon the long-term cost of their projects would be raised from 5.625% to 7%. That figure, which should cut a number of marginal projects under consideration, is expected to be fought bitterly--especially by beneficiaries of the navigation and irrigation projects, the hardest to justify economically.

However, the proposals include a grandfather provision, exempting projects under consideration by Congress when the regulations become final next March. Already authorized projects would be allowed to continue unless Congress has not funded them for at least five years. A large but unknown amount of the \$4 billion Army Corps of Engineers backlog would likely to cut down under these groundrules, but most of the Bureau of Reclamation's \$5.8 billion in pending projects would escape the axe. Environmentalists are expected to fight the grandfather clause strenuously.

Comments will be accepted until March 31 by W. Don Naughtan, director of the Water Resources Council, 2120 L St. N.W., Washington, D.C. 20037. Public hearings are planned for 10 a.m. on March 20 and 21 at the National Museum of History & Technology, 14 St. and Constitution Ave. N.W.

TECHNOLOGY

COMPUTER MODELING: Strong interest in computer modeling for predicting ambient pollutant concen-

trations in the air over cities has been evident in recent engineering society meetings. Ambient air quality is not

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only a nice thing to know, but can also save industry money. For instance, if a state can prove to the Environmental Protection Agency that a major emission source because of prevailing winds or location does not greatly affect air quality over a nearby city, less stringent controls might be required.

This is so although EPA and local air pollution boards are committed to as much emission reduction as is technically feasible from all plants. There are so many emission problems, it stands to reason that those affecting air quality and human health the most will be expected to be cleared up first.

There is also some resistance in enforcement circles because of the feeling that the time for studies and measurements is past, and additional work of this nature retards enforcement efforts. Further, many of the new contracts for mathematical modeling are going to aerospace firms and college campuses. Hard-bitten enforcement people see this as more of a political ploy to ease the employment situation among R&D people than as an aid to enforcement.

That is the reaction among Southern California air pollution officials to a whopping \$1,697,384 contract issued by the California Air Resources Board to North American Rockwell Science Center, Thousand Oaks, Calif. The director of the study, T.L. Loucks, says "The experiment will include an intensive program of air sampling in the Los Angeles Basin, San Francisco Bay and the San Joaquin Valley....Principal target of the experiment will be aerosols, including development of test instruments and techniques to measure these pollutants." To which local officials say essentially, "what else is new?"

Among the software available is Sun Oil's STACK program, for predicting effects of large point sources on an airshed (AWN, Oct. 26, 1970, p. 8). But some pollution-control officials, noting that source data (especially for small, multiple sources) and meteorological conditions aren't too well known, have successfully resorted to simplified manual techniques. One such model, in which the surface concentration is directly proportional to local source strength and inversely proportional to wind speed,

is described in this December's issue of the Air Pollution Control Association Journal. Author Steven Hanna, of the National Oceanic and Atmospheric Administration, says the model is nearly as good as more complex ones.

Among the papers presented recently on atmospheric modeling are three three available for 75 cents each from the American Institute of Chemical Engineers: Air Pollution Climatology, G.C. Holzworth; Development and Initial Evaluation of an Urban Diffusion Model for Carbon Monoxide, W.B. Johnson et al and Observations of Air Transport Paths in Urban Areas, J.K. Angell.

Available for \$3 (\$1 to ASME members) from the American Society of Mechanical Engineers: A New Method to Forecast Air Pollutant Concentrations, U. Saxena and K.C. Tsao. Both engineering organizations are located at the United Engineering Center, 345 East 47th St., New York, N.Y. 10017.

* * *

NO CATALYST FOR '74? Ford is testing four emission control system combinations for its 1974 California-bound cars. Nowhere in the list is the touted Engelhard platinum catalytic converter. But spokesmen for Ford insist that this does not affect 1975 plans for Ford to go platinum--at least not yet. Further, they say, a contract between the two for Engelhard to supply catalytic converters for 1974 (AWN, June 7, p. 1) is still in effect. Ford will use at least some converters in limited testing programs, such as in fleet vehicles, by 1974. Unneeded converters may be stockpiled if no further arrangement is worked out.

Currently under consideration at Ford for 1974 California limits: simple modification of existing engine emission control components; engine modification plus exhaust gas recirculation; engine modification, exhaust gas recirculation plus air pump and engine modification plus thermal reactor.

None of the four systems requires either lead-free fuel or the Engelhard catalyst. Prior to early December, all Ford emissions groups had been concentrating on catalysts for both 1974 California standards and 1975 federal stand-

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ards on the assumption that lead-free fuel would be available state-wide in California by mid-1973. Denied assurances on lead-free fuel (AWN, Dec. 13, p. 5), Ford now says it has lost one year of developmental work and while it will "market some kind of model that year" in California, it can't state now what type of system will be controlling its emissions.

Work on 1975 national standards will be held in abeyance, Ford said, until some sort of California system is squared away. Company officials now indicate they will eventually elect to follow the course already decided upon by General Motors and Chrysler and conduct field tests of prospective 1975 systems using small company or government fleets where access solely to lead-free fuel is more easily controlled.

At Ford, blame for the failure to get lead-free fuel in California for the field test falls squarely on the shoulders

of the federal EPA. Its reluctance to approve the use of unleaded gas for 1974 emission certification tests forced Ford to rely on the California state legislature, which has rejected enforcement of lead-free fuel distribution in two successive sessions. Even were such a law passed in the session starting January, it would be too late for the originally proposed Ford test program, sources there say.

TRW, MITSUBISHI JOIN: A joint venture company to market pollution-control equipment has been created by TRW and Mitsubishi, subject to Japanese government approval. The new firm, Civiltech Corp., will be headquartered in Tokyo and capitalized in yen equivalent to \$1 million. The company's first products will be TRW's charged droplet scrubber (AWN, Oct. 25, p. 8) and an oil combustion burner for industrial and utility applications. The burner is said to reduce nitrogen oxides emissions to 25 parts per million without recirculation.

SCIENTISTS WORRY OVER PCBs AT LANDMARK NIEHS MEETING

Is the scare over polychlorinated biphenyls (PCBs) in the environment justified? Nearly one hundred scientists from around the world gathered in North Carolina last week to discuss PCBs under the auspices of the National Institute of Environmental Health Sciences. Covering the meeting for AWW was McGraw-Hill reporter Wil Lepkowski, a biochemist by training. The tentative conclusion on the basis of "chaotic" data: PCBs are a potentially serious and pressing environmental danger. And brickbats were reserved for Monsanto, the major world producer of PCBs, for not detailing its customers. That attitude could apply to other companies producing long-lived chemicals as well.

Polychlorinated biphenyls are everywhere. Scientists have detected these ubiquitous and toxic chemicals in rainfall, unsedimented Arctic lakes, snow fields and the ocean; they're in the body fat of most birds, fish, animals, and man; they've killed mink in quantities as small as ten parts per million in the body; they've contaminated poultry and have turned up in recycled food packaging materials. Spectacular industrial outbreaks of PCB poisoning have occurred in Japan and West Germany, producing horrendous skin eruption in persons affected by huge doses of thousands of parts per million. They are bad news.

How bad was one reason scientists traveled last week to a rustic North Carolina conference center called Quail Roost. Topics ranged from enzymology to corporate accountability. And among the many policy problems underscored, this one stood out: Monsanto Co., America's sole manufacturer of PCBs and in the PCB production business since the early 1930's, must release more information on the identities of its customers.

The meeting itself was designed to debate scientific rather than policy issues, and summing up the two-day affair was Dr. Norton Nelson, chief of environmental medicine at New York University. Among the top research issues and gaps Nelson underscored:

* Shortage of analytical tools for detecting impurities in test samples of PCBs. There are 210 possible variations. But also mixed in with technical-grade samples are triphenyls and several different reaction products.

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* These complex mixtures point up toxicological problems, too. Which of the hundreds of possibilities actually cause damage? Nelson held up for praise a paper given by J.G. Vos of the University of Utrecht, Netherlands, that tried to tie pathology to specific chemicals within the mixture. Vos showed, for example, that chlorinated dibenzofurans caused edema in test animals, PCBs themselves caused hepatic porphyria, and chlorinated dibenzofurans were responsible for liver damage and skin lesions in various test animals.

* The most advanced biochemical studies of PCB impact on the enzyme system are on the so-called ATP-ases which control the supply of energy to cells. But the details are still skimpy, showing little more than an inhibitory effect, which would be expected anyway. Nevertheless, Nelson said the enzyme approach offers the best technique for understanding the toxicological details of PCB impact on living things.

* There are still too many gaps in determining the ecological flow of PCBs in the environment: where PCBs come from, where they go, and where they end up. Needed are better data on PCBs in rainfall and other atmospheric routes that move them all over the world. No one yet knows whether PCBs are transported in particles or in the vapor phase, or whether in water supplies they move as particles or through microorganisms.

* Too little is known about the breakdown of PCBs in the environment by light or other physical factors, and what part these products play in toxicity.

* Environmental monitoring needs considerable improvement. "It's not clear," said Nelson, "that data are being collected from various forms of the biota in an orderly way. As extension of this kind of analysis occurs, it is going to be inevitable that some general rules of sample selection and placement strategies are going to have to be improved if we're to get a reasonable return."

* Distribution of PCBs in food "has matured pretty well." Food protection authorities have a good idea where PCBs are found in food, Nelson said, and in some instances where they are coming from. Nelson said he was impressed with the similarities between the U.S. and Swedish patterns of PCB occurrences in foods.

* The most disturbing thing from PCB research up to now, said Nelson, "is how extraordinarily ubiquitous these materials are and how without any warning we suddenly discover that they are found everywhere we look, from blood plasma to Arctic lakes."

* Man is more resistant to PCBs than other species studied. Shrimp is the most sensitive of all, killed by concentrations as little as one part per million. Mink is the most sensitive mammal, showing reproductive damage at less than ten ppm. Nelson said that much more work needs doing on species susceptibility differences and said he couldn't "take much comfort from the Monsanto data" that showed scant toxicity to rats in concentrations as high as 100 ppm. Studies done elsewhere, Nelson said, have turned up some evidence of bladder cancer in rats. "The picture is clearer than it was six months ago but still far from clear. And the biggest gaps I see are to look for malignancies much more closely, run down this disparity between species which stands as a real puzzler, and gross patterns of toxicity."

* Nelson also said the field would remain chaotic and get nowhere unless researchers agreed to choose up to ten out of the some 210 possible PCB isomers and do thorough toxicological research on each. Until they do, he said, there would be no way to meaningfully compare data on any type of pathology.

But picking out the choice ten for study won't be easy. Last month, after considerable pressure from environmentalists and the federal government, Monsanto finally released its production figures: 42,500 tons produced in 1970, 353,000 tons manufactured since 1960. But that dope is not enough to satisfy the researchers. As Nelson put it: "It is inexcusable that chemists still have to run around with test tubes analyzing materials suspected of containing PCBs. There is a public responsibility here which

would require as a first step that there be an open disclosure of sources and use of these hazardous materials."

The movement of PCBs through the industrial environment may be easier to trace now, since Monsanto has limited the sale of PCBs to customers using them in such internal, closed environment systems as heat exchangers outside the food industry, transformers and capacitors. Monsanto has also begun a program of calling back to its Sauget, Ill., plant for disposal all used PCB-containing equipment.

But up to a few months ago, PCBs were going into industrial and road paints, hydraulic fluids, lubricants, cardboard sealants and putties, soil stabilizers and purposes not even Monsanto has imagined. There are studies to trace the environmental flow of PCBs, from origin to end organisms, but the efforts so far are primitive, mainly because no one will talk about sources. Many scientists suspect PCB fallout from jet airliners. But the airlines so far haven't disclosed whether they are still using PCBs in their lubricants or hydraulic fluids.

Further pressure related to occupational safety could raise Monsanto's sweat quotient. Since PCBs are toxic they pose not only an environmental but an occupational threat at both the manufacturing and usage level. The Health, Education and Welfare Department's Occupational Safety and Health Institute has the authority to step in and order Monsanto to disclose clinical data on workers involved in PCB manufacture. Neither the Council on Environmental Quality nor the Office of Science and Technology has pressed such an effort.

CBQ's Terry Davies, co-chairman of the interagency ad hoc PCB committee, says there are no plans to begin such a study in election-year 1972. "PCBs are not high on the occupational health priority list," he says. But he indicated the day after the Quail Roost meeting that such a study would be recommended.

The slowness of the federal government to press Monsanto for easily obtainable health data points up the traditional leadership void still remaining over environmental policies. Lacking a toxic substances act there is no federal agency for concentrating policy decisions--primarily for getting needed information instantly from private enterprise--short of a Presidentially declared national emergency. Decisions thus are made obliquely and seldom get to the heart of a problem. Most of the public turns to the Environmental Protection Agency as the chief spokesman. Most action over PCBs has come so far from the Food and Drug Administration, under its food protection mandate. But FDA has no power to regulate the non-food industries.

The major fallout from the Quail Roost meeting from the buttonhole effect: A mammalian toxicologist could debate with a fishery scientist why high-chlorine PCBs are more toxic to birds than low chlorine PCBs, and why the fish follow the opposite pattern. Another research policy issue punctuated was the need for scientists to specify dosages in their toxicity studies. E.P. Lichtenstein of the University of Wisconsin told AHN that 10 to 50 parts per million were the significant concentrations to keep in mind as relevant to human health effects. Anything larger was unrealistic.

One issue remained totally unanswered at the meeting: Long-term chronic effects of PCBs. That work is just beginning. And it was agreed that the PCB issue won't wither away as has the mercury toxicity scare. Background levels of mercury were just as high 50 years ago as they are today in many areas. Not so with PCBs. They are a man-made chemical and they stay around a long time.

THE STATES: NEWS IN BRIEF

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CALIFORNIA: Gov. Ronald Reagan has signed into law a bill prohibiting the state from doing business in excess of \$5,000 with any persons or firms not complying with air and water pollution laws and regulations.

COLORADO: The state attorney general's office has ruled that the Air Pollution

Control Commission does not have the authority to require installation of emission monitoring equipment by industry. The office also ruled that a proposed state automobile testing program cannot be enforced. The commission thinks it has emission monitoring authority under federal clean air regulations, but will ask the Colorado legislature to write authority into state law anyway.

FLORIDA Power & Light is asking the state Public Service Commission for an elastic clause on its rate contracts--to allow for passing on pollution-control costs automatically to the consumer.

* Phosphates will be allowed in certain specialty detergents for an extra six months beyond the scheduled January 1 ban, the Dade County Pollution Control Hearing Board has ruled. Phosphates would be allowed in such cleaners as dishwasher detergents, and those for hospitals, food processing and the dairy industry. The ban on phosphates in laundry detergents and household cleaners still stands (AMN, Dec. 6, p. 6).

ILLINOIS: Commonwealth Edison has appealed a federal district court's preliminary injunction against the Atomic Energy Commission's issuing a 50% operating permit for the Quad Cities nuclear powerplant (AMN, Dec. 20, p. 4). The utility asked for "expedited consideration" of the case because of what it terms an urgent need for the power the plant would produce. If the appeals court approves the appeal, the case could be heard as early as January 3; if not, a six-month wait is likely. A company spokesman called the decision granting the preliminary injunction "certainly upsetting." But things could get worse: the court Commonwealth Edison had to appeal to is the same one that handed down the Calvert Cliffs decision--putting Quad Cities' operating license procedure into doubt in the first place.

MASSACHUSETTS: Gov. Francis Sargent says his state will seek bids for recycled paper products, joining such states as New York and California. The state would like 60% recycled fiber in the 45 million rolls of adding machine paper and 420,000 scratch pads it will order soon.

NEW YORK CITY: Flamboyant city Air Resources Commission Robert Rickles announced his resignation last week, effective February 1. He said he plans to help organize a citizens' pressure group to fight for better mass transportation in the city. Despite ongoing disputes between Rickles and top officials in Mayor John V. Lindsay's administration, the resignation was apparently not forced, and the initiative for it came from Rickles. He had submitted a letter of resignation four months ago, but was persuaded to stay on by city Environmental Protection Administrator and mayoral hopeful Jerome Kretschmer. Kretschmer didn't protest this time.

Deputy Commissioner Fred Hart will take over temporarily, and perhaps permanently. Rickles said he feels he has done all he can within government, and can safely leave the "nitty gritty" of enforcing the city's tough comprehensive air code to Hart. However, some environmentalists fear that enforcement will suffer without Rickles' strong presence. Rickles said he would announce his support for a presidential candidate within the next few weeks. Pressed, he said that he would not support either Lindsay or Sen. Edmund Muskie as long as his alternative to President Nixon is still in the race. He avoided criticizing Lindsay in his farewell speech, but flayed unnamed men within his administration for "remarkable and unpardonable shallowness."

WASHINGTON: A \$225 million bond issue for waste disposal facilities is included in a "Washington Future" program to be submitted to the state legislature in January by Gov. Dan Evans.

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